DOCUMENT RESUME

ED 330 875 CE 057 708

TITLE Rescue Manual. Module 1.
INSTITUTION Ohio State Univ., Columbus. Instructional Materials Lab.
PUB DATE 89
NOTE 51p.; For related modules, see CE 057 709-717.
AVAILABLE FROM Instructional Materials Laboratory, Ohio State University, 842 West Goodale Blvd., Columbus, OH 43212 ($5.50; set of 10, $33.00).
PUB TYPE Guides - Classroom Use - Instructional Materials (For Learner) (051)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Accidents; *Emergency Programs; *Emergency Squad Personnel; First Aid; Learning Modules; *Natural Disasters; Occupational Safety and Health; Postsecondary Education; Recordkeeping; *Rescue; Safety; Safety Education

ABSTRACT

This learner manual for rescuers covers the current techniques or practices required in the rescue service. The first of 10 modules contains 9 chapters: (1) introduction; (2) occupational stresses in rescue operations; (3) size-up; (4) critique; (5) reports and recordkeeping; (6) tools and equipment for rescue operations; (7) planning for emergency operations; (8) incident command system; and (9) dealing with natural disasters. Key points, an introduction, and conclusion accompany substantive material in each chapter. (NLA)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

RESCUE MANUAL

ED330875

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

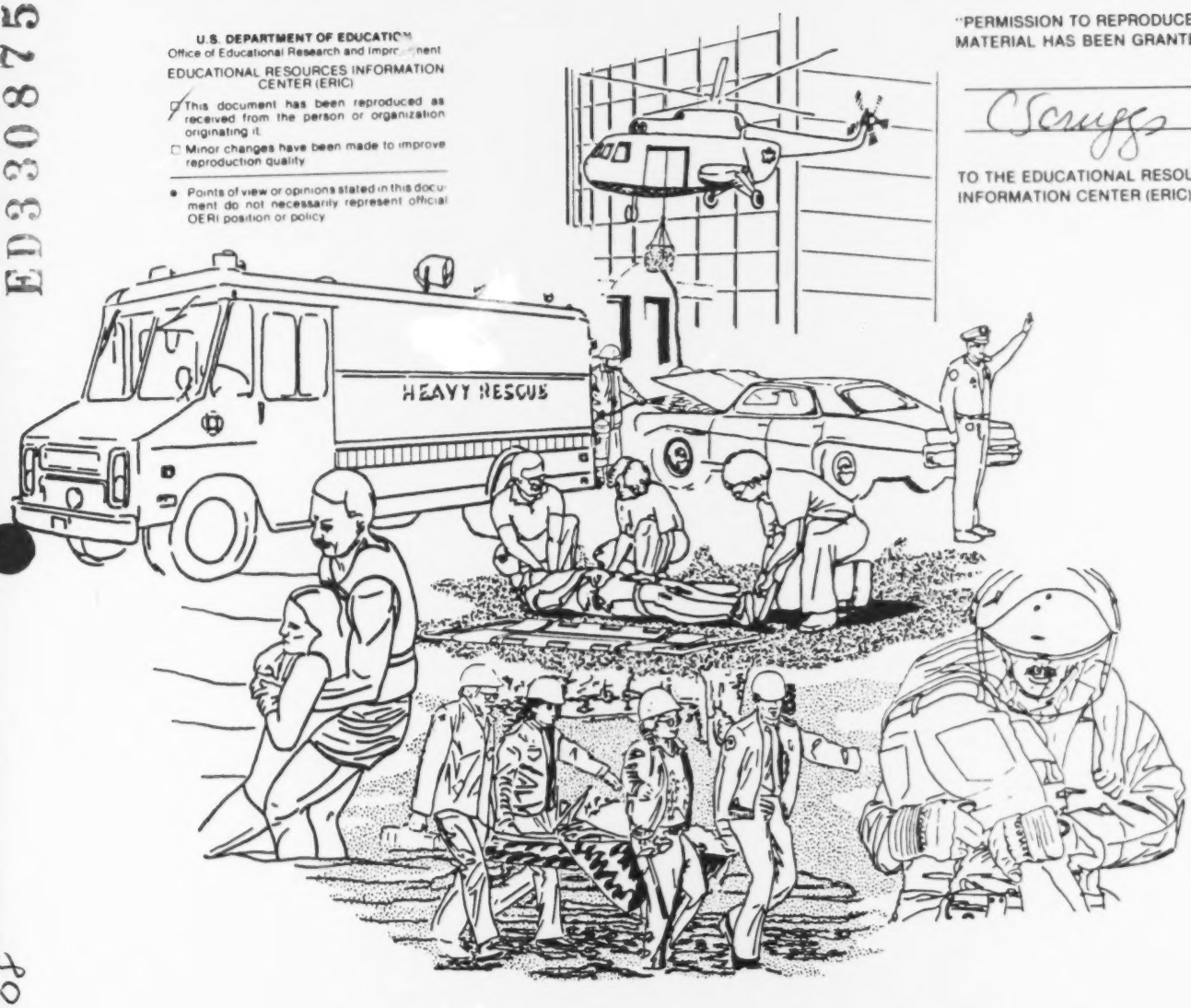
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

C Scruggs

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."



CE057705

MODULE 1

Introduction
Occupational Stresses in Rescue Operations
Size-up
Critique
Reportings and Recordkeeping
Tools and Equipment for Rescue Operations
Planning for Emergency Operations
Incident Command System
Dealing with Natural Disasters

BEST COPY AVAILABLE

INSTRUCTIONAL MATERIALS LABORATORY
THE OHIO STATE UNIVERSITY
COLUMBUS, OHIO 43210

Copyright 1989 by The Ohio State University. All rights reserved.

Edited and distributed by the
Instructional Materials Laboratory
The Ohio State University
College of Education
Columbus, Ohio 43210

"**CAUTION:** Rescue operations routinely subject the rescuer to the very real probability of death or serious injury. Rescuers must understand the nature and effect of each attempt and each technique. In addition, practice continuing education and safe materials are necessary to insure all potential safety in extrications. The materials and information presented here are intended only as a learning aid, and are no substitute for training. Expert opinions, recommendations, and guidelines change as research and experience refine procedures. This text includes the most up-to-date information from rescuers working in the field. When applicable, the standards of the National Fire Protection Association (NFPA) and Occupational Safety and Health Administration (OSHA) have been followed for this text.

Specialized procedures require demonstration and training by subject-matter experts. It is not likely that a rescuer will become proficient in all rescue operations. Most rescuers develop proficiency in only a few areas but may be familiar with several others. You are assuming the risk of injury if not proficient in a rescue technique.

This text suggests procedures and explains how to do them. The techniques given are guidelines only. Each department should incorporate its own procedures and address local needs.

Nondiscrimination Policy — The policy of The Ohio State University, both traditionally and currently, is that discrimination against any individual for reasons of race, color, creed, religion, national origin, sex, age, handicap, or Vietnam-era veteran status is specifically prohibited. Title IX of the Education Amendments of 1972 prohibits sex discrimination and Section 504 of the Rehabilitation Act of 1973 prohibits discrimination on the basis of handicap in education programs and activities. Accordingly, equal access to employment opportunities, admissions, education programs, and all other University activities is extended to all persons, and the University promotes equal opportunity through a positive and continuing affirmative action program.

RESCUE MANUAL

INSTRUCTIONAL MATERIALS LABORATORY
THE OHIO STATE UNIVERSITY
COLUMBUS, OHIO 43210

RESCUE MANUAL
ACKNOWLEDGMENTS

The *Rescue Manual* is a culmination of the combined efforts of many people who are dedicated to the rescue service. Special acknowledgment is extended to the following personnel for coordinating the development and production of the publication.

Ronald J. Slane, Technical Consultant
Joyce Leimbach, Curriculum Consultant
Jeanne Desy, Editor
Darlye Oakes, Photographer
Andrew Eastwood, Computer Illustrations
Tom Hindes, Director, Instructional Materials Laboratory
John Adkins, Attorney-At-Law

The development of this publication is the result of the expert guidance and advisement of the following personnel who served as members of the Rescue Editorial Board.

James Bartholomew, D.D.S.	Assistant Director, Public Safety Services	Ohio Department of Education, Division of Vocational and Career Education	Columbus, Ohio
Thomas Beverly	Lieutenant	Columbus Division of Fire	Columbus, Ohio
Russ Born	Master Scuba Diver	W. Born & Associates	Millersport, Ohio
Jeff Corder	Firefighter	Coshocton Fire Department	Coshocton, Ohio
Lee Curry	Lieutenant	Columbus Division of Fire	Columbus, Ohio
Robert Featheringham	Public Safety Services Consultant	Ohio Department of Education, Division of Vocational and Career Education	Columbus, Ohio
Gary Fellows	Fire Protection Engineer	Wheeling Pittsburgh Steel Co.	Steubenville, Ohio
William Fibich	Public Safety Services Consultant	Ohio Department of Education, Division of Vocational and Career Education	Columbus, Ohio
Charles Foster	Manager	Ohio Department of Natural Resources, Division of Forestry	Columbus, Ohio
Emily King	Special Programs Administrator	Ohio Department of Natural Resources, Division of Watercraft	Columbus, Ohio
Terry Kirkpatrick	Public Safety Services Consultant	Ohio Department of Education, Division of Vocational and Career Education	Columbus, Ohio
Greg Lash	Firefighter	Columbus Division of Fire	Columbus, Ohio
John Mason	Emergency Medical Technician Consultant		Medina, Ohio
Daryle Oakes	Technical Consultant		Columbus, Ohio
Bob Pettit	Assistant Chief of Staff for Planning	Ohio Emergency Management Agency	Columbus, Ohio
Albert R. Pugh	Professor Emeritus	The Ohio State University	Columbus, Ohio
Willis Troy	Public Safety Services Consultant	Ohio Department of Education, Division of Vocational and Career Education	Columbus, Ohio
Louis Vargo	Fire Chief	Mt. Pleasant Fire Department	Mt. Pleasant, Ohio
Mike Warner	Firefighter-Paramedic	Medina Fire Department Life Support Team	Medina, Ohio

RESCUE MANUAL ACKNOWLEDGMENTS (cont.)

Contributing Authors

Glenn E. Alexander	Chief	Dayton Fire Department	Dayton, Ohio
Dave Bowman	Hazardous Materials Technician	Hazardous Materials Bureau	Reynoldsburg, Ohio
Tom Forbes	Technical Consultant	Bureau of Underground Storage Tank Regulations (BUSTR)	Reynoldsburg, Ohio
Catherine A. Heaney, Ph.D., M.P.H.	Assistant Professor	The Ohio State University, Department of Preventive Medicine	Columbus, Ohio
Dan Hoffman	Paramedic-Firefighter	Liberty Twp. Fire Department	Powell, Ohio
Cheryl Kimerline	Watercraft Volunteer	Ohio Department of Natural Resources, Division of Watercraft	Columbus, Ohio
Debra Krall	Watercraft Volunteer	Ohio Department of Natural Resources, Division of Watercraft	Columbus, Ohio
Lawrence Krall	Watercraft Officer, Specialist	Ohio Department of Natural Resources, Division of Watercraft	Columbus, Ohio
William Lee	Assistant Chief	Cleveland City Fire Department	Cleveland, Ohio
Ralph Leen	Watercraft Officer, Specialist	Ohio Department of Natural Resources, Division of Watercraft	Columbus, Ohio
Steve Parsons	Hazardous Materials Technician	Hazardous Materials Bureau	Reynoldsburg, Ohio
Douglas A. Rund, M.D., FACEP	Associate Professor and Director	The Ohio State University, Division of Emergency Medicine	Columbus, Ohio
William Staiger	Watercraft Officer, Specialist	Ohio Department of Natural Resources, Division of Watercraft	Columbus, Ohio
Marc Theodore	Watercraft Officer, Specialist	Ohio Department of Natural Resources, Division of Watercraft	Columbus, Ohio
James Tippett	Captain	Columbus Division of Fire	Columbus, Ohio
Larry Young	Aviation Management Training Specialist, and the Office of Aircraft Services	U.S. Department of the Interior	Boise, Idaho

Using the Brake-Bar Rack for Rope Rescue
The part of this module titled *Using the Brake-Bar Rack for Rope Rescue* is from the copyrighted works titled *Using the Rappel Rack* copyrighted 1982, revised 1986, by Steve Hudson, Diane Cousineau Hudson, and Toni Williams and is used with their permission

Others acknowledged for their contributions and assistance are:

Ashland Chemical Company, Ashland, Ohio
Bacharach, Inc., Pittsburgh, Pennsylvania
City of Ashland, Fire Division, Ashland, Ohio
Columbus Division of Fire, Columbus, Ohio
Community Ambulance, Garretsville, Ohio
Globe Safety Equipment, Dayton, Ohio
Hazardous Materials Bureau, Ohio Department of Commerce, Division of State Fire Marshal, Reynoldsburg, Ohio
Lorain Community Hospital Ambulance, Lorain, Ohio
Medina County Career Center, Medina, Ohio
Mine Safety Appliances, Pittsburgh, Pennsylvania
National Fire Protection Association, Quincy, Massachusetts
National Draager, Inc., Pittsburgh, Pennsylvania
Northeast Regional Agriculture Engineering Service, Ithaca, New York
Office of Aircraft Services, U.S. Department of the Interior, Boise, Idaho
Ohio Fire Academy, Reynoldsburg, Ohio
Ohio State University, Columbus, Ohio
Otis Elevator Company, New York, New York
Pigeon Mountain Industries, Inc., Lafayette, Georgia
Scott Aviation, Lancaster, New York
United States Coast Guard, Marine Safety Detachment, Cincinnati, Ohio
Westerville Fire Department, Westerville, Ohio
Wheeling Pittsburgh Steel Company, Wheeling, West Virginia

FOREWORD

The intent of this manual for rescuers is to provide the latest instructional content and serve as an up-to-date, comprehensive source of information covering the current techniques or practices required in the rescue service. To help in this endeavor, an instructor's manual has been developed to be used in conjunction with this learner's manual. The manual has been produced in a series of modules to facilitate future revisions more rapidly and cost effectively.

The instructor's manual follows the key points identified in the text. Chapters have been included in the text which exceed those printed in any other resource. These include managing and operating the emergency vehicle, rope rescue techniques, industrial rescue, farm accident rescue, and various water emergency procedures, among others.

That the rescue profession is a dangerous and challenging career is a recognized fact. It is our hope that this text will help the rescuer meet the challenges of the rescue service in a safe and professional manner.

Tom Hindes
Director
Instructional Materials Laboratory
College of Education
The Ohio State University

PREFACE

The Ohio State University Instructional Materials Laboratory has played a major role in the training of public safety personnel through the development of text materials for many years. Due to the advances in the rescue techniques, it became apparent that the existing text was obsolete. Upon the advice of many knowlegeable people in the rescue service, the Instructional Materials Laboratory initiated the development of a new text that would be easily updated, and address the needs of the rescuer. To this end, an editorial review board representing a broad spectrum of individuals in the various phases of the research profession was convened to determine what topics this text should address. The culmination of this effort is the Rescue Manual. It is hoped that this text will be useful to not only the new rescuer but will serve as a reference source for the experienced rescuer.

Joyce Leimbach
Curriculum Consultant
College of Education
The Ohio State University

Ronald Slane
Technical Consultant
College of Education
The Ohio State University

MODULE 1

TABLE OF CONTENTS

Introduction 1
Occupational Stresses in Rescue Operations 3
Size-up 7
Critique 11
Reporting and Recordkeeping 17
Tools and Equipment for Rescue Operations 23
Planning for Emergency Operations 25
Incident Command System 33
Dealing With Natural Disasters 37

MODULE CONTENTS

The 1989 Rescue Manual has been grouped into ten modules in accordance with the recommendations from the Rescue Editorial Board.

Module 1
Introduction
Occupational Stresses in Rescue Operations
Size-up
Critique
Reporting and Recordkeeping
Tools and Equipment for Rescue Operations
Planning for Emergency Operations
Incident Command System
Dealing with Natural Disasters

Module 2
Patient Care and Handling Techniques
Rescue Carries and Drags
Emergency Vehicle Operation
Self-Contained Breathing Apparatus
Protective Clothing

Module 3
Forcible Entry
Structure Search and Rescue
Rescue Operations Involving Electricity
Cutting Torches

Module 4
Construction and Characteristics of Rescue Rope
Knots, Bends, and Hitches
Critical Angles
Raising Systems
Rigging
Using the Brake-Bar Rack for Rope Rescue
Rope Rescue Techniques
Aerial Ladder and Aerial Platform Rescue

Module 5
Hazardous Materials

Module 6
Industrial Rescue
Rescue From a Confined Space
Extrication From Heavy Equipment
Rescue Operations Involving Elevators

Module 7
Extrication From Vehicles

Module 8
Trench Rescue
Shoring and Tunneling Techniques
Farm Accident Rescue
Wilderness Search and Rescue
Aircraft Rescue
Helicopter Information

Module 9
Ice Characteristics
River Characteristics and Tactics for Rescue
Water Rescue Techniques
Water Rescue/Recovery Operations
Dive Operations
Water Rescue Equipment
Water Rescue Safety Tips

Module 10
Glossary
Appendix

PUBLIC SAFETY SERVICES PUBLICATIONS AVAILABLE

For ordering and pricing information contact:
Instructional Materials Laboratory
The Ohio State University
842 West Goodale Boulevard
Columbus, Ohio 43212
Phone (614) 221-4950

MODULE 1
ACKNOWLEDGMENT

Acknowledgment is extended to the following persons for their willingness to share their knowledge and expertise and for authoring information presented in this module:

Introduction
Dan Hoffman, Paramedic-Firefighter, Liberty Twp. Fire Department, Powell, Ohio

Occupational Stress in Rescue Operations
Douglas Rund, M.D., FACEP, Associate Professor and Director, The Ohio State University, Division of Emergency Medicine, Columbus, Ohio

Size-up, Critique, and Reporting and Recordkeeping
Glenn Alexander, Chief, City of Dayton Fire Department, Dayton, Ohio

Tools and Equipment for Rescue Operations
Mike Warner, Firefighter-Paramedic, Medina Fire Department Life Support Team, Medina, Ohio

Planning for Emergency Operations and Dealing with Natural Disasters
Bob Pettit, Assistant Chief of Staff for Planning, Ohio Emergency Management Agency, Columbus, Ohio

Incident Command System
Gary Fellows, Fire Protection Engineer, Wheeling Pittsburgh Steel Co., Wheeling, West Virginia

INTRODUCTION

To date there has been little rescue material available that addresses a multitude of rescue techniques in one collective effort. The Instructional Materials Laboratory at The Ohio State University has developed instructional manuals and audiovisuals for public safety services for many years and continues to address the needs seen in emergency efforts.

This rescue manual represents an immense undertaking. It provides suggested procedures and techniques that can be used in many emergency situations. It was authored and reviewed by many subject-matter experts. Rescue operations often involve risk-taking procedures. Rescuers must always remember safety first, that is, the safety of the rescuers and bystanders, as well as that of the victims involved.

Throughout the development of this document, it was readily evident that many emergency situations are unique, and there was no textbook to be consulted, nor is there time during an emergency to research techniques to be used to execute a rescue. Successful rescue operations often involve on-site improvisation. The ideal rescue situation seldom exists. It is necessary to be able to use the equipment, materials, and personnel that are readily available. Rescue personnel sometimes place their own lives on the line. The degree of risk is high; however, sharing of information and rescue techniques, along with training and practice, should reduce the risk. The concern for liability is also high; but the bottom line is that someone has to do the job.

It is important for people involved in rescue operations to maintain as calm an attitude as possible. It is often necessary to work quickly, and clear, calm thinking usually produces the best results. Teamwork and communication between the rescuers are both important to executing a safe rescue. When sizing-up an emergency situation, procedures to be used should be discussed among the rescue team members. Successful rescues usually involve the cooperation and effort of the total team. It is also important for individual rescuers to be receptive to others' suggestions and not feel rejected if someone else's idea is adopted.

Training enables rescuers who are confronted with emergencies in the field to better provide adequate care to victims. Trained safety service personnel are often the best suited for emergency rescue work. It is strongly recommended that rescuers be trained in more than one rescue procedure, i.e., in emergency medical technician and water rescue procedures, fire fighting procedures and hazardous materials handling, farm and trench rescue procedures, or other combinations. Cross-training enables a rescuer to assist in more than one kind of emergency, and to fill in for others when necessary. It also allows optimum use of personnel. There is no way for one person to train for every type of rescue. Every rescue operation is different, but most rescues have some commonalities.

Training and actually performing rescue operations gives personnel experience in techniques and procedures. Preplan and discuss potential "what if" scenarios. With this information, an emergency rescue plan can be designed for potential incidents. Each completed rescue should be followed by a critique.

No one group can handle every type of rescue emergency. It is often necessary to call on help outside the local departments for specific assistance. A list of current resources complete with names and phone numbers should be kept on file.

Each community's public safety service agencies should develop a plan for interagency action in the event of an unforseen disaster. This allows for a greater workforce, adequate backup for the local team, and a contingency for any community emergency.

It is common for rescue personnel to be emotionally and physically exhausted once a rescue is completed. The tension and stress encountered when working under adverse conditions is intense. Working against the clock, along with the concern for human safety, creates an extremely tense environment.

Everyone reacts to stress differently. It is important for rescuers to acknowledge that everyone does react. Some people may become extremely chatty and need to talk, while others may withdraw and try to block out the details, especially when involved in an unpleasant situation.

Following a rescue operation, all equipment, materials and supplies must be cared for and maintained in a condition ready to address a future emergency. Review what happened, what procedures were implemented, what worked and what did not, and actually critique the entire operation.

Rescue operations are very important to human life. Procedures are often challenging and successful rescues are rewarding. In a time of need rescuers are greatly appreciated.

OCCUPATIONAL STRESSES IN RESCUE OPERATIONS

INTRODUCTION

Occupational stress and its potential effects on health are of much concern to all workers. The term "occupational stress" describes a process whereby individual employees appraise and react to job conditions and demands. The amount of stress that employees experience is determined both by the nature of their jobs and the extent of each employee's coping abilities. Employees in some occupations experience more stress than employees in others. Rescue seems to be one of the high stress occupations. This chapter describes the stressful aspects of rescue operations, the adverse effects of stress on health and job performance, and strategies for reducing the amount of stress experienced by rescue workers.

Jobs in rescue operations and emergency medical services can be exciting, challenging, and deeply rewarding. However, they can also be very stressful. The aspects of rescue jobs that are challenging and rewarding are also those that make the job stressful. When the rescue team is alerted, there is a high probability that some serious human emergency has occurred. The salvage of human life or limb may involve a precise series of life-saving steps conducted in exactly the correct order in a brief time. Time seems to vanish while rescuers try to perform complex motor tasks under less than ideal conditions.

The other important feature of stress generation is the inescapable demand to make a decision on the basis of incomplete data. Life and death decision making under such uncertain conditions can generate tremendous stresses within rescue workers.

The rewards of doing the job well, however, are immensely satisfying. The salvage of human life and health has to be one of the greatest satisfactions for any professional health-care worker or rescue worker.

SOURCES OF STRESS

The work schedule of rescue workers is a potential source of both pleasure and stress. Many workers enjoy working long (24-hour) shifts in order to have substantial stretches of time between shifts to spend in leisure-time activities and/or with their families. However, long shifts can also cause stress. The body's natural biorhythms are not in harmony with such a schedule.

Rescue work can be physically demanding, especially when rescuers respond to calls throughout most of the work shift. The body's energy and resources are quickly depleted under these circumstances. Instead of spending days off pursuing hobbies or socializing, rescuers may devote time off to resting up for the next shift. Some workers feel that instead of allowing for more time with their family and friends, the 24-hour shift schedule actually interferes with their family life and social life.

Rotating shifts and frequently working overtime often aggravates this situation. Research has demonstrated that employees who work nonstandard shifts are more at risk for illnesses. Again, the body's ability to resist disease is adversely affected by long, constantly-changing work hours.

For some rescue workers, the critical incidents of their work days are not as stressful as the minor, daily hassles. Good teamwork and supportive supervision are essential for effective rescue teams. A critical and punitive supervisor or an uncooperative coworker can create much stress for the rescue worker.

Bureaucratic battles and unending paperwork can also cause frustration and tension. The small daily hassles are particularly stress-involving because so much of a rescue worker's energy has to be directed toward dealing with the life-and-death situations that arise. Few resources remain to deal with the other, smaller hassles of the job, and thus there is little tolerance for them.

The ups and downs of a routine shift can also be taxing. Rescue work is not characterized by an even work flow. Long periods of "down time" are punctuated by immediate calls to critical action. A rescue worker must have personality characteristics that allow sufficient flexibility to accommodate this unevenness in the work day.

Another aspect of rescue operations that can cause stress for rescue workers is the lack of opportunities for advancement. The system is relatively new and is still developing; however, at this time, surveys of rescue workers suggest that they are frustrated by the lack of a career ladder.

Given all of the potentially stressful aspects of rescue operations, it is normal for rescue workers to suffer from stress-related symptoms. Some people are more vulnerable to stress than others. Research shows that those who dwell on the negative aspects

of events and those who blame themselves for failures or negative occurrences on the job are more prone to stress-related symptoms. Those with Type A personalities are also more vulnerable to stress than others. Type A personalities are characterized by an impatient and aggressive approach to their work. They hate to wait, and experience feelings of anger when their progress is delayed.

Everyone experiences some degree of stress at one time or another. The worst thing that a person can do is to try to deny the presence of stress or feign invulnerability to stress. Uncontrolled, chronic high levels of stress can have dire results.

RESPONSES TO STRESS

Rescue workers may experience several immediate, short-term physiological responses to stress. The body's response to stress includes a release of catecholamines such as epinephrine. This results in elevations in blood pressure and heart rate, increased serum glucose levels, and decreased gastric movement. People may also experience cold hands and feet and profuse sweating.

Stress may also result in more enduring outcomes. Research has now documented many adverse health effects of high levels of stress. Highly stressed rescue workers may suffer chronic exhaustion. Even after long periods of rest, they may not feel that they have regained their energy and strength. Several mental health effects of stress are evident. Depression, anxiety, tension, and extreme irritability can be stress-related. Stress has been implicated as one of the many causes of cardiovascular disease and certain gastrointestinal disorders. There is also evidence that stress, through impairing immunity, weakens the body's defenses so that cancers can more easily develop. Finally, stress can lead to skin inflammations, allergies, certain types of sexual dysfunction, and headaches.

Stress is not related to disease in the same direct and disease-specific way as a bacteria or other disease-causing agent. Rather, responses to stressful situations in the environment alter the body's endocrine balance, thus increasing the susceptibility to physiochemical or microbiologic disease agents. Therefore, people manifest a wide variety of symptoms and syndromes as a result of high levels of stress.

Stress can also contribute to a deterioration of job performance. An exhausted and despondent rescue worker may be more likely to exercise poor judgement during a call or may be slower to respond appropriately. Such a worker may begin to suffer from chronic tardiness or absenteeism. Often, highly stressed workers turn to alcohol or some other substance to alleviate stress-related symptoms. Alcoholism and substance abuse may develop, resulting in further impairment of job performance.

Unrecognized and untreated stress will result in decreases in job satisfaction and may lead to workers leaving their jobs and the field of rescue operations altogether. Rescue occupations have a high rate of turnover, which is detrimental to the provision of high-quality care.

COPING WITH STRESS

Denying the presence of stress serves no one's needs, and threatens rescue worker's personal mental and physical health. The probable accompanying fall in job performance makes the job more difficult for coworkers and puts victims more at risk.

Stress that is ignored impairs the vitality of the rescue operations system as a whole. High turnover and low morale erode the effectiveness of the system and cause it to expend much energy on refilling the flagging ranks of workers by training new men and women rather than on improving the skills and abilities of current rescue workers.

There is no need to be fatalistic about stress. Many strategies can be employed, both by the individual rescue worker and by the rescue operations system, to reduce stress and its negative consequences. The first step for both the worker and management is to acknowledge the presence of stress and the need to deal with it.

Each rescue worker has unique coping mechanisms that work best for him or her. Some may attempt to focus on the positive aspects of work. For example, in the face of an unsuccessful rescue attempt, they may consciously try to remember and celebrate successful saves.

Others succeed in coping with their stress by depersonalizing relations with their patients. This coping strategy should be implemented cautiously. Depersonalization that is carried too far may be a symptom of uncontrolled stress, and can impair rather than enhance job performance.

Others cope by talking about their actions and feelings with others. Open communication with coworkers and others facing similar stresses may be

invaluable and should be encouraged in rescue systems. Coworkers, family members, and friends may provide much-needed support for dealing with a difficult incident or a string of daily hassles.

Some workers may prefer to release stress through physical activity. This strategy actually serves two purposes—it releases the tension due to stress and also enhances overall good health and resistance to disease.

Some workers manage to control their stress responses by setting aside time to relax, preferably away from work. (Beware the rescue worker who spends much of his or her free time lounging around the workplace.) Sometimes special procedures can be used to help workers relax. Relaxation techniques, such as guided imagery and meditation, are a standard component of any stress-management training.

In addition to using stress management techniques, individual workers can actively try to reduce the stressful aspects of the job. An important step in this process is to bring problems to the attention of management. Often, the best solutions to problems are arrived at when the workers and management work together. Workers can also organize support groups for rescue workers. A support group often provides understanding and helpful advice from people who experience similar concerns and issues.

Management has a very real responsibility to help rescue workers avoid unnecessary stress and manage unavoidable stress. Providing adequate staffing and proper schedules, and distributing the workload equitably can reduce some of the stress encountered on the job. Some prehospital emergency systems are experimenting with innovative schedules and rotations in an attempt to find the most efficient, yet nonstressful, strategy. Management should seriously consider offering stress management training and the opportunity for to workers to debrief after encountering critical incidents. These efforts will help protect the health and well-being of rescue workers.

CONCLUSION

Stress is inevitable in rescue work. The demands of rescue work, both physical and emotional, are considerable. If ignored, the resulting stress can lead to ill health, substance abuse, depression, poor job performance, and high turnover. These adverse outcomes can be avoided if both management and individual workers recognize the stresses inherent in rescue work and actively attempt to reduce them. Through identification of potential stressors and enhancement of coping skills, rescue workers can reduce their stress levels, be more satisfied with and rewarded by their jobs, perform their duties more capably, and enjoy life more fully.

SIZE-UP

KEY POINTS

- The importance of size-up
- Evaluation and translation
- Factors to consider during size-up

INTRODUCTION

The success or failure of a rescue operation hinges on the judgments made by the incident commander at the scene. A command decision is based on the information gathered by the supervisors on the scene and then related to the incident commander. The incident commander needs to have an understanding of the elements that can affect the desired outcome in order to make the critical decisions necessary to assure a successful rescue. Decisions must flow from a systematic process and be easily understood. Size-up points out the proper tactical and strategic approach to the rescue.

Definition

Size-up is the thought process built around evaluation of information available at the emergency scene, and the translation of that information into a plan of action to assure the successful execution and control of the incident. Size-up is done to predict the outcome of an incident or situation. In other words, the incident commander tries to envision all of the things that could possibly happen in the immediate future that could affect the outcome of the operation.

The major goal of the size-up is to avoid an unsuccessful rescue attempt. For example, if people are trapped in a vehicle lying on its top, the incident commander must make sure that the vehicle is stabilized so that it is not in danger of moving while the injured are being treated and extrication procedures are being done. The incident commander must continually size up the operation to determine its success and to anticipate the resources and methods required for the next phase of the operation.

Evaluation and Translation

Evaluation and translation are the major components of a size-up, and are the basis of command decisions. Size-up is a process that starts with the first supervisor to arrive at the scene and continues throughout the incident. The evaluation provided by the initial supervisor is often the foundation for every command decision that follows throughout the incident. If the evaluation is accurate, the size-up will lead to a quick and effective outcome. If the evaluation is flawed, the decisions that follow will be flawed, and can lead to poor performance or confusion at the scene until orders are modified to accommodate the corrected size-up.

The Game Plan

Making an accurate size-up is not enough. The size-up must lead to a master plan with specific strategies that are conveyed to the rest of the supervisors and personnel on the scene. A simple description of what is seen and how the situation is to be attacked is sufficient. It is important that the size-up and resulting game plan be conveyed to higher-ranking supervisors upon their arrival. An accurate discussion of what was seen and what is being done assures a smooth transfer of command.

Size-up is not limited to the decision made upon the arrival of the first crew or the first supervisor. Many components of a size-up can be done in advance of an incident. For example, a snowy, sleet-filled day predictably leads to rescue activity because of the numerous accidents caused by vehicles sliding off the road and people slipping and falling on ice. It is also logical to predict that severe cold weather may cause cases of frost bite and hypothermia.

The realization that certain incidents may demand certain rescue activities begins the process of size-up. This type of assessment does not have to wait until the alarm sounds. The obvious conclusion is that size-up involves as much preplanning as actual reaction at the scene of the emergency. Effective preplanning signals the personnel, tools, and equipment that are going to be needed to complete the operation.

FACTORS TO CONSIDER IN THE SIZE-UP

Of all the factors to consider in size-up, weather conditions are the most obvious. The weather creates emergency rescue situations. The high temperatures of July and August often cause the elderly, athletes, and playful youngsters to suffer heat exhaustion and/or heat-stroke related problems. If a marathon race is scheduled and the temperature is 80°F at eight o'clock in the morning, that is a pretty good indication of what the day is going to be like, at least during that race.

Another factor to consider is the organization's limitations. If the local service can staff only two rescue units, and a marathon race has 1500 entrants, the possibility exists that the service lacks the resources needed to cover that race and the rest of the community at the same time. The size-up of that situation would indicate a need for mutual-aid assistance or extra personnel. To assure that the community will be supplied with sufficient resources, assistance will have to be provided.

The limitations of the available tools and personnel is another factor to consider. If a unit lacks the ability to perform rope rescue or dive rescue activities, it is important to know where personnel with those capabilities are available, and how they will be notified if the need arises. Rescuers must also be aware of the capabilities and limitations of the tools and equipment available.

General information such as the time of day is also important in size-up. A classic example of an incident in which time of day is an important factor is an alarm indicating that a truck has hit a school building. This will lead to a different kind of reaction at nine o'clock in the morning on a Saturday in July than at nine o'clock in the morning on a Tuesday in March. A response to an alarm can be altered by the time of day and also by traffic conditions.

During the rush hour, alarm responses are slowed. A critical situation requiring extrication will demand more equipment during rush hour. Additional equipment may be needed, and the incident commander should call for the extra equipment as soon as the call is dispatched, since the traffic congestion will require more travel time. If the equipment is not needed it can be sent back. If it is needed, valuable time is saved if assistance is enroute. When lives are at stake, delay can be the difference between success or failure.

SIZE-UP BASED ON THE SITUATION

The type of rescue problem can be dictated by the particular situation found. For example, in a situation where victims are trapped in a house fire and the structure is relatively sound, the rescue problem becomes one of finding the victims and removing them from the building to a safe atmosphere so treatment can begin in a safe environment.

In a high-rise building, on the other hand, moving occupants to a safe environment does not necessarily mean removing them from the building. Rescue can be simply directing them to a safer zone four or five stories below the fire. It may also mean that fully protected fire personnel should do the search and bring the individuals to a safe zone where paramedics who are not dressed in full turnout clothing can begin medical treatment. Size-up also indicates that a high-rise fire requires more personnel than a house fire.

A second kind of rescue problem occurs when the building itself is unstable. For example, when an earthquake or fire results in a collapsed roof with people trapped, the situation becomes dramatically different. Above all, the incident commander must be concerned for the safety of the rescuers. Without the rescuers the trapped individuals have no chance of being rescued.

The incident commander must consider shoring up portions of the building so that the rest of the building does not collapse on people trying to effect the rescue. The problem may be compounded if the environment in which rescuers are working demands specific protective clothing. If paramedic crews are not cross-trained and not required to wear fire fighter's clothing, they cannot be ordered into the immediate fire zone.

A rescue involving tunneling, trenching, or a cave-in is different than any kind of structural rescue. In these situations, material is usually packed around the victim. Consequently, these rescues require a tremendous number of personnel who understand the need for shoring-up and doing longitudinal or secondary tunneling, and who have other types of skills as well. In this type of emergency there is the additional need to direct a supply of air or oxygen into the area to assist the victim's breathing. If the earth or soil is packed around the victim, the victim's ability to expand the lungs is greatly diminished and the victim usually needs respiratory support.

A hazardous environment is another situation that requires a knowledge of size-up procedures. The size-up must indicate the proper reaction to a rescue involving such contaminants or hazards as a radioactive leak, a toxic by-product of combustion, an ammonia or chlorine-type gas leak, or a downed live electrical wire. Certain guidelines must be followed in any hazardous environment. Crew members must maintain a safe, clear working zone. Potential wind shifts within the hazardous area must be carefully monitored. A hazardous atmosphere requires rescuers to approach a scene with caution. The rescue must be planned around taking charge and control of the safe working areas.

Water and ice rescues can also be preplanned through size-up. If a community lacks a river or lake, the most common water rescue will be in a swimming pool. The most common swimming pool rescue is one in which a person is found unconscious in the pool. The procedure requires a rescuer to jump into the pool upon arrival at the scene and rescue the individual, or to start CPR on the victim who has been removed from the pool. Safe water rescues in other configurations such as fast water or low dams require a tremendous amount of training. (For further information see the module on water emergencies.)

A final size-up situation to be considered is extrication from vehicles. This type of rescue situation is the one most familiar to all public safety personnel. Extrication requires the use of spreading jaws, air bags, shoring blocks, air chisels, and an entire inventory of tools and equipment normally associated with performing this task. Size-up along with training allows rescuers to identify the needed equipment quickly. (For further information see the chapter on extrication from vehicles.)

Unstable situations require an in-depth knowledge of advanced rescue techniques. The size-up process can predetermine which resources have specific rescue capabilities and whether or not they are available.

CONCLUSION

Careful size-up is essential for a successful rescue. The incident commander must relay the plan of action as quickly as possible, so that rescuers can react. If specific situations dictate a change in a plan, the change must be communicated quickly to everyone.

The plan that evolves from a size-up is not etched in stone. It is place to start; an idea to send to all involved personnel. The incident commander needs to be constantly aware of the progress of a rescue and changes in action required by a changing situation. If the situation changes, the plan must change. Once again, that change must be communicated to everyone involved in the rescue.

CRITIQUE

KEY POINTS

- The importance of a critique
- The components of a critique

INTRODUCTION

Good rescue performance is built upon training and the knowledge learned from past experiences in rescue operations. An analysis of the positive and negative aspects of each rescue experience is important for developing good performance and safe, effective rescue operations. To assure that the positive aspects are reinforced and the negatives are eliminated, a thorough review or critique of the activities of a given rescue operation must be conducted.

Incidents that involve serious injuries with a potential for casualties, and multiple-casualty incidents must be critiqued with meticulous attention to the facts. An incident that is exceptional and rare, such as a window cleaner trapped on the side of a tall building, would probably require a formal critique to provide a standard in case of a repeat occurrence.

A good critique can lead to improvement in policies and procedures or reinforcement of procedures that are in place. The critique needs to be an open, honest, and fair evaluation based upon facts, with an understanding of the emotions surrounding the solution. The only way a critique can lead to successful problem-solving is if it is based on facts.

Definition

A critique is simply a review of an incident, designed to analyze the events that occurred while dealing with the situation. The two primary reasons for conducting a critique are, (1) to improve the efficiency of the operation, and (2) to provide an accurate record of the sequence of events, should there be litigation associated with the accident.

Psychological Benefits

Rescue personnel often encounter horrendous emergency situations which can pose emotional and physical health hazards to all personnel at the scene. Such stress can be transferred to the rescuer's family setting and thereby can affect overall performance.

In terms of psychological treatment, or outcomes, it is important that an operation centered around a gruesome incident or one that is heavily charged with emotion be followed up with a critique. Such a critique assumes a unique character. It may be formal or informal. Besides acquiring the facts, if done properly, this type of critique can become the tool that relieves stress for the crew members and provides an opportunity to release emotions or opinions that affect the performance of the crew members and their ability to work together. While it is important to record a distressing situation, it is more important to perform the critique from a psychological perspective.

Many public safety departments have professional guidance available for their personnel through emergency assistance programs, a chaplain corp, or a staff psychologist who can work with staff members at a moment's notice. A good critique with the psychological impact in mind can spare the department the loss of personnel from burnout and emotional distress.

TYPES OF CRITIQUES

A critique should be conducted as soon after the incident as possible. The magnitude of the incident will dictate whether or not the critique will be a formal, full-scale review or an informal, simple review. A large-scale incident, or one that might lead to litigation, requires a formal, full-scale critique.

Formal Critique

A formal critique necessitates collecting all of the run reports and audio tapes surrounding the incident, from the original telephone call reporting the incident to the dispatch center, to the last rescuer's input upon returning to headquarters. It is prudent

to secure copies of all the TV tapes, including both the edited and unedited news coverage. The information should be compiled in chronological order for presentation.

Informal Critique

Most emergency incidents simply require the recalling of events from run reports and an analysis by members at the scene of the incident. The review is usually short and informal, requiring an exchange of facts with the incident commander or the crew supervisor conducting the exercise. The focus of the informal critique is to provide an overview of the operation to make sure it followed standard operating procedures and accomplished the expected outcome.

COMPONENTS OF A CRITIQUE

The person conducting the critique needs to determine as many facts as possible about the incident. The facts collected begin with the time of the first telephone call and conclude when the last personnel return to headquarters. In most cases, the person conducting the critique should be looking for exceptions to normal activities.

As with size-up, if a subject or activity is not unusual, then it is not stressed in the presentation. For example, if the alarm is given in a clear concise manner within acceptable time limits and is documented in the transcript of the exact conversation during alarm transmission, there is no need to dwell on it in the critique (see Figure 1).

TRANSCRIPT OF TELEPHONE TAPE

FOR DROWNING INCIDENT

Dispatcher	1328:55 -	Windsor Emergency Operator
Caller	1328:57 -	A neighbor boy has fallen through the ice in my pond. I need help right away.
Dispatcher	1329:02 -	Can you see the boy?
Caller	1329:04 -	Yes, he's hanging on a spare tire at the edge of the ice. His head and shoulders are out of the water. I tried to get him, but the ice keeps cracking under my weight, so I threw him the spare out of my pick-up truck.
Dispatcher	1329:18 -	What's your address and telephone number?
Caller	1329:20 -	It's the Shaus Farm, Box 128, Chapman Road; that's between Kuck Road and McClintock Road. My telephone number is 555-1212.
Dispatcher	1329:29 -	OK, we'll send somebody out. In the meantime you can go out and help keep the boy calm. Let him know help is on the way. If you can, get somebody out at the end of the driveway to flag down the emergency crews and direct them to the pond.
Caller	1329:42 -	Right - I'll have my son out by the road. (Disconnect)
	1329:46 -	Conversation completed.

Figure 1. Transcript

A narrative report for a situation without complications would simply include the following information: the response route, the action taken on the scene, and the number of personnel used in controlling the incident. If the action involved a standard operating procedure and nothing new was learned, or no unique situation was encountered, a formal critique is not necessary. However, if a situation out of the ordinary forced a reaction from the rescuers that is not part of standard operating procedures, include a review of this action in a critique.

Every organization has a standard run report form. Usually the form is standardized for each region or state. The run report should be completed by the crew commander, the incident commander, or both. It usually includes basic information such as the name, age, and sex of the rescued person, whether or not the rescued person was the owner/occupant of the vehicle or building, and the nature of the emergency. A run report commonly provides information like the alarm time and response time, the hospital to which the victim was transported, and the medical treatment given both enroute and at the scene (see Figure 2). The run report should be used as an outline and generally plays a major role in the informal critique.

ITEMS FOR THE CRITIQUE

Diagrams and Drawings

A general diagram or map of the incident area is important and should include relevant geographic information, such as street locations, items that help provide reference to the scene, and obstacles encountered during the course of the rescue operation. If the rescue involved a building, include a diagram of the structure showing the distance to the ground or any intersection area. Make the drawings to scale if possible. It is important to understand the relationship of infrastructure items, such as wires, sewers, water mains and other building attachments, to the incident, and to make sure they are included in the drawing.

If rescue activities involve the interior of a structure, include a separate drawing that notes the important structural characteristics of the building, such as doorways, stairwells, and fire escapes. Avoid noting light fixtures if they were not part of the rescue operation. The basic structural diagram that is of most value is the site plan of the structure. It is wise to assume that every map or drawing made will be transferred to an overhead transparency or a slide if the critique becomes formal (see Figure 3).

Written Reports

Information necessary for the critique includes any written reports completed, including unit reports and the summary incident report done by the incident commander on the scene. All reports must become part of the information gathered. The run or incident report is probably the most important document dealing with the incident and should contain the most precise information.

The information gathered becomes the basis for the narrative of a critique, even though it may not be put on a transparency or slide for the graphic presentation. The incident commander will be expected to provide a summary of all the activities surrounding the incident, as well as a pertinent diagram of critical features mentioned in the text of the report.

Interview Information

Another factor to consider in a critique is information gathered from personnel interviews. Once the basic information has been gathered, the individual responsible for the critique should interview the incident commander (if the incident commander is not doing the critique) to review the basic strategy that was employed in handling the incident. The interviews should then proceed down the chain-of-command until the commander and crew members of the first arriving piece of equipment have provided complete information about what was observed and what action took place.

Interviews should not be restricted to the supervisors and crew members; however, it is important to interview only individuals present at the incident. Important information can often be collected by talking to bystanders, such as the citizen who called in the incident or the mutual-aid crew members. In order to understand what was seen and what information was relayed the individual responsible for the critque should be sure to interview all individuals with relevant information.

Final Presentation

The next step in the critique process is to review all the information collected. The presenter of the

RUN REPORT FORM

EMS SERVICE: _____ DATE: _____
COUNTY: _____ RUN NUMBER: _____
LOCATION OF CALL: _____
NATURE OF CALL: _____
NAME: _____ PHONE: _____
ADDRESS: _____ CITY: _____
AGE: _____ SEX ❑M ❑F HOSPITAL: _____

TIME	BP	PULSE	RESP	AVPU	MONITOR RHYTHM

CALL REC'D
BLS TO SCENE
ALS TO SCENE
BLS AT SCENE
ALS AT SCENE
TO HOSPITAL
AT HOSPITAL
IN SERVICE
AT QUARTERS

AGENCY/PERSON ACCEPTING PATIENT: _____ TIME: _____

HOSPITAL USE ONLY
ER#: _____
ADMIT#: _____
DIAGNOSIS: _____

DISPOSITION
❑ DER
❑ DOA
❑ HOLDING
❑ LAMA
❑ T/L
❑ T/S
❑ TRANSFER

MILEAGE

START	FINISH	TOTAL

RUN TYPE: ❑ EMERGENT ❑ NON-EMERGENT ❑ SCHEDULED/TRANSFER ❑ NO REMOVAL
SEVERITY OF CONDITION: ❑ MINOR ❑ SERIOUS ❑ CRITICAL ❑ APPARENT DOA
COMMUNICATIONS: ❑ TELM ❑ BLS ❑ ALS ❑ PHONE ❑ DISPATCH

CHIEF COMPLAINT/ASSESSMENT: _____

SIGNIFICANT HISTORY _____
ALLERGIES _____ PHYSICIAN: _____

PATIENT MEDS

PHYSICAL ASSESSMENT

SKIN
❑ NORMAL
❑ CYANOTIC
❑ PALE, ASHEN
❑ FLUSHED
❑ DRY
❑ JAUNDICED
❑ DIAPHORETIC
❑ COOL
❑ WARM

PUPILS

RESPONSIVE	R__	L__
UNEQUAL	R__	L__
DILATED	R__	L__
CONSTRICTED	R__	L__
NON-REACTIVE	R__	L__

BREATH SOUNDS

CLEAR	R__	L__
RALES	R__	L__
WHEEZES	R__	L__
DIMISHED	R__	L__
ABSENT	R__	L__

DRUGS HOSPITAL CONTACT:

TIME	DRUG-SUB DEFIB	DOSE WATTS/J/C	ROUTE	JUST

JUSTIFICATION CODES: POS=PHYSICIAN ON SCENE, SO=STANDING ORDERS, EDP=ED PHYSICIAN
NAME OR SIGNATURE OF PHYSICIAN:

SUSPECTED NATURE OF PROBLEM

❑ ABDOMINAL PAIN
❑ ALCOHOL-RELATED
❑ ALLERGIC REACTION
❑ ANXIETY
❑ ASSAULT
❑ BEHAVIOR DISORDER
❑ BLEEDING/LACERATIONS
❑ BURNS
❑ CARDIAC
❑ DEAD ON ARRIVAL
❑ DIABETIC
❑ FEVER
❑ FRACTURE/SPRAIN
❑ HEAD INJURY
❑ MULTIPLE COMPAINTS
❑ NAUSEA/VOMITING
❑ MULTIPLE TRAUMA
( ) BLUNT ( ) PENETRATING
❑ OB/GYN
❑ OVERDOSE
❑ POISONING
❑ RESPIRATORY
❑ SEIZURE
❑ SHOOTING
❑ SPINAL CORD
❑ STABBING
❑ STROKE
❑ SUICIDE ATTEMPT
❑ UNCONSCIOUSNESS
❑ WEAKNESS/PARAYSIS/NUMBNESS
❑ OTHER: _____

TREATMENT GIVEN

❑ AIRWAY
❑ ORAL
❑ NASAL
❑ EOA_____
❑ EGTA_____
❑ ETT
❑ ORAL_____
❑ NASAL_____
❑ CRINCOID_____
❑ CANNULA
❑ MASK
❑ MASK W/O BAG
❑ RFB/AMBU
❑ POS. PRESSURE
FLOW RATE_____
❑ BANDAGE
❑ BURN CARE
❑ CARDIAC MONITOR
❑ CONTROL BLEEDING
❑ CPR TIME_____
❑ SQUAD
❑ BY-STANDER
❑ DEFIB./CARDIOVERT
❑ EXTRICATION
❑ KED/XPI
❑ SSB
❑ OTHER_____
❑ ICE PACK
❑ IMMOBILIZATION
❑ CERVICAL
❑ EXTRICATE
❑ FOAM
❑ ORTHOPED
❑ PHILLY
❑ SAND BAGS
❑ OTHER_____
❑ SPINAL
❑ BACKBOARD
❑ REEVES
❑ SCOOP
❑ OTHER_____
❑ EXTREMITY
❑ AIR
❑ BOARD
❑ DISPOSABLE
❑ FRAC. PAC.
❑ HARE
❑ SAGER
❑ SLATTED
❑ OTHER_____
❑ INFANT DELIVERY
TIME_____
❑ IV THERAPY_____
NO. ATTEMPTS_____
❑ MAST
❑ INFLATED
❑ RIGHT LEG
❑ LEFT LEG
❑ ABDOMINAL
❑ PSYCHOLOGICAL 1st AID
❑ RELIEF TENSION PNUMO
❑ SUCTION
❑ NASAL
❑ ORAL
❑ TRACHEAL
❑ TRANSPORT ONLY

CREW MEMBERS DESIGNATE A=EMT-A, AA EMT-AA, P EMT-P, D DRIVER, O-OTHER

POLICE

Figure 2. Sample Run Report

BEST COPY AVAILABLE

THIRD PARTY BILLING INFORMATION	ADDITIONAL EQUIPMENT USED
MEDICARE NO:	
MEDICAID NO:	
BLUE CROSS & BLUE SHIELD NO:	
WELFARE NO:	
OTHER INSURANCE:	
INSURANCE NO:	
NEXT OF KIN:	RELATIONSHIP
ADDRESS:	PHONE

SQUAD NARRATIVE

PERSONAL EFFECTS

X _____ X _____
SQUAD SIGNATURE WITNESS SIGNATURE

REFUSAL STATEMENT

I, _____ (PATIENT'S NAME) refuse to allow the _____ to give me emergency care and to remove me to a hospital.

I have been advised of the risks involved in making such a refusal.

I hereby release the _____ from any liability and claims which could arise from the consequences of this refusal of emergency care and/or transportation to a hospital.

X _____
WITNESS

X _____
PATIENT SIGNATURE OR IF A MINOR, PARENT OR LEGAL GUARDIAN

X _____
WITNESS

_____ _____
AGE OF PATIENT AMBULANCE REPORT NO.

DATE SIGNED: _____

Figure 2. Sample Run Report (cont.)

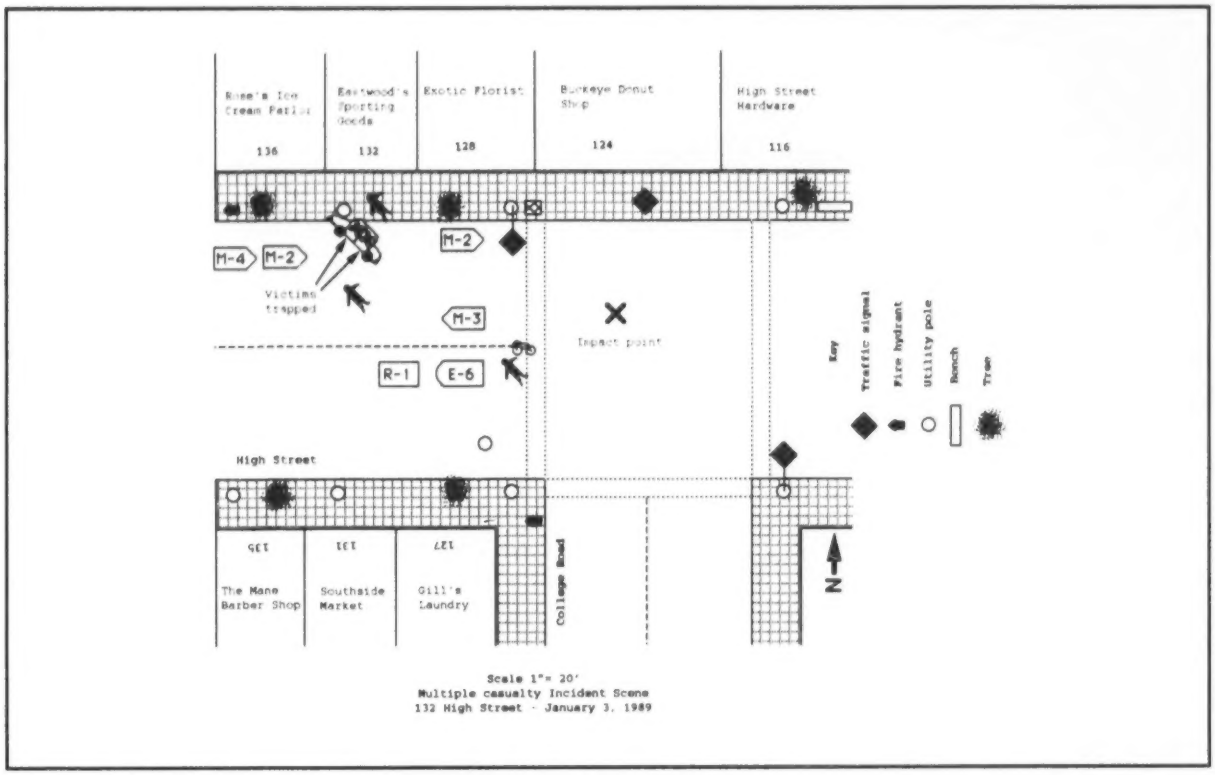


Figure 3. Critique Diagram

critique must compare the transcript, diagrams, and run reports to check for discrepancies. Any discrepancies must be corrected. Once the information is in place, a visual presentation should be prepared.

The initial alarm information is of extreme importance in a final formal presentation. A transcript or tape of the alarm provides a basis for understanding how the alarm was received, what initiated the type of response, and why the situation may have demanded additional equipment. Although the transcript may not be part of the formal graphic presentation, in terms of slides, overheads, or other graphics it will definitely be the basis of the chronological accounting of the incident.

With a clear understanding of what transpired during the incident, the individual presenting the critique should be prepared to make a verbal presentation. A written narrative should be provided describing the general action taken, along with references and a copy of the visuals used in the critique. The initial presentation should be conducted in the presence of the incident commander or the chief to make sure that the presenter (if it is not the incident commander) is in agreement with the person in charge. The critique should then be presented to all command personnel and any others who might confront a similar incident.

The information gained from a critique is often the basis for a change in policies or standard operating procedures within an organization. It is important that all of the policy or operational ramifications be mentioned, particularly in a formal critique, so that everyone has an understanding of the need for any change suggested by the critique.

CONCLUSION

It is important for a critique to provide information that can be shared with an entire rescue service as soon as possible after an incident occurs. A good organization has the ability to correct past errors and build on the positive efforts detailed in a good presentation. Developing and presenting a good incident critique provides a strong self-improvement tool for everyone involved.

REPORTS AND RECORDKEEPING

KEY POINTS

- **The importance of reports and recordkeeping**
- **Reporting responsibilities**
- **The incident report**
- **Miscellaneous reports**

INTRODUCTION

Accurate reporting and recordkeeping are crucial to analyzing an emergency response. Records and reports are important components of an effective, efficient response system. They provide an organization with a base for productivity analysis and for the measurement of rescuers' performance levels. They also provide an indicator of the severity of an activity and of the probability that a situation will be ongoing or recurring.

An incident report provides critical information from the legal viewpoint. Assuming that the particular organization is not involved in a lawsuit, a filed report can be used by both parties. Information contained in an incident report is almost always the foundation of any lawsuits or investigations of an incident.

Activities such as the training of involved personnel also need exact reporting. The information gathered from these reports can appear in court two and three years later.

REPORTING RESPONSIBILITIES

Usually, the responsibility for collecting and filing reports is placed in the highest office of a department. When a rescue service is part of a fire department, the chief is responsible for reports.

In an independent rescue service, such as a countywide or a regionally-operated service, the chief of that service is responsible for seeing that reports are completed and properly filed. The individual unit report, however, is the responsibility of the officer in charge of the crew or vehicle. This run report includes documentation of all of the activities of the crew while working at an incident. In cases where several units are sent, the crew commander of each unit completes a report and sends it to a central location where the reports are assembled, and an overall incident summary is completed by the incident commander. Multiple reports from one incident are kept together and filed in one location.

THE INCIDENT REPORT

Each report must include the name of the department generating the report. The report must also include the following: the incident location, details of the call, the times associated with the call, the time the alarm was received, the time the alarm was transmitted, the time rescuers arrived at the scene, the time enroute to the hospital or to headquarters, the time the unit was in service, and a description of the situation encountered (see Figure 4).

Critical information such as the address of the incident, the name of the victim, and the owner of the property is listed. Other information documented on the report is how the alarm was received, whether or not the police were called, and whether police were on the scene (see Figure 5).

The report also documents pertinent details about the situation found, the care or treatment of the victim, and an assessment of the victim's condition at the time of the rescuers' arrival. It must also include data about the nature of the suspected problem and about any medication administered to any victim by a paramedic. Treatment provided to victims such as splinting and oxygen administration must also be described.

Actions Taken by Rescuers

The information provided in the action taken section will vary with each situation and with each

EMERGENCY MEDICAL INCIDENT REPORT

Run Number

1 Date

7 ☐ A/R ☐ M/A ☐ Columbus ☐ Washington ☐ To ☐ From ☐ Perry ☐ Westerville

2 Location

3 Patient Name

4 Address

5 City State

6 Age Male Female

8 Medic Time Log
Dispatch Time
Arrive/Scene
To Hospital
At Hospital
In Service
In Station

9 Dispatch Message:

10 Supporting Units

11 Call Received By:
☐ P.A. ☐ Police ☐ Walk In
☐ Radio ☐ Phone ☐ OUBE

12 Medic No. Unit No.
In Chg.
Att.
Att.

13 Refused Aid
signature
Date 19

14 Location of Run
☐ Doctor Office
☐ Highway Acc.
☐ Job Site
☐ Nursing Home
☐ Office
☐ Public Place
☐ Residence
☐ Other

15 Disposition
☐ Cancelled Call
☐ Service Call
☐ Not Trans, Advised
Transported By
☐ Private Auto
☐ Supporting Sqd.
☐ Private Ambulance
☐ Sharon Medic
☐ Childrens Hosp.
☐ Doctors Hosp. N.W
☐ Grant Hosp
☐ Mt. Carmel Hosp. C.E
☐ Riverside Hosp.
☐ St. Ann's Hosp.
☐ University Hosp.
☐ Co. Morgue
☐ Other

16 Type of Injury or Illness
☐ Animal Bite ☐ Cuts/Bruises ☐ D.O.A. ☐ Heart Attack ☐ Poisoning
☐ Burn ☐ C.V.A. ☐ Electric Shock ☐ Hemorrhage ☐ Psychiatric
☐ Chest Pain ☐ Diabetic ☐ Fainting ☐ Illness—General ☐ Seizures
☐ CHF ☐ Diff. Breathing ☐ Fracture ☐ Intoxication ☐ Suicide—Attempted
☐ Choking ☐ Drowning ☐ Internal Bleeding ☐ OB—GYN ☐ Unconscious
☐ Gun Shot ☐ Overdose—Possible ☐ Other

17 Observations (please check all that apply):
☐ Cleaned Wound and Advised

	Head	Neck	Chest	Back	Eyes	Ears	Shoulder	Arm L/R	Elbow L/R	Forearm	Hand L/R	Wrist L/R	Chest/Back	Groin	Abdomen	Pelvis	Hip L/R	Thigh L/R	Knee L/R	Leg L/R	Ankle L/R	Foot L/R
Open Wounds																						
Fracture S/C																						
Burns (note degree)																						
Pain																						
Cut/Bruises																						

18 Pre Hospital Emergency Care
☐ Airway Inserted ☐ Oral ☐ Nasal ☐ Esophageal ☐ Endotracheal #
☐ False Teeth Removed
☐ Suction Used
☐ Oxygen LPM
☐ Nasal Cannula ☐ Face Mask
☐ Artificial Ventilation ☐ Mouth to Mouth ☐ Bag/Valve/Mask ☐ Demand Valve
☐ CPR Given
☐ Patient Vomited
☐ Other ☐ Thumper
☐ Spinal Immobilization
☐ Bleeding Controlled
☐ Cold Application
☐ Restraints Applied
☐ Limb Immobilization
☐ Vomiting Induced
Time
☐ Rotating Tourniquets
Time
☐ Long Backboard
☐ ½ Backboard
☐ Cervical Collar
☐ Sand Bags
☐ Blanket/Cravats
☐ Stryker Splint
☐ Board Splint
☐ Traction
☐ Air Splint
☐ Anti-shock Trousers

19 Physical Condition

Status	Skin Color	Respirations	Pulse	Pupils
☐ Conscious	☐ Normal	☐ Normal	☐ Regular	☐ Responsive
☐ Disoriented	☐ Cyanotic	☐ Labored	☐ Irregular	☐ Equal
☐ Unconscious	☐ Pale/Ashen	☐ Shallow	☐ Thready	☐ Unequal
☐ Convulsing	☐ Flushed	☐ Noisy	☐ Absent	☐ Dilated
☐ Unruly	☐ Moist	☐ Absent		☐ Non Reactive

20 Past History
☐ Allergy
☐ CVA
☐ Diabetes
☐ Hypertension
☐ Seizures
☐ Previous Angina
☐ Previous Heart

21 Drug Therapy

	Time Given	Amount	
Atropine			MG
Calcium Chloride			CC
Decadron			MG
Dexrose 50%			CC
Dopamine			MCG/Min.
Epi. 1:1000SC			MG
Epi. 1:10,000IV			MG
Isuprel			MCG/Min.
Lasix			MG
Lidocaine, Bolus			MG
Lidocaine, Drip			MG/Min.
Nitroglycerin			Tab
Sodium Bicarb			CC
IV 5% D/W			CC
IV Ringers			CC
Other (specify)			

23 Vital Signs

	Time	Time	Time
Blood Pressure	1) ___/___	2) ___/___	3) ___/___
Respirations	1) ___/Min.	2) ___/Min.	3) ___/Min.
Pulse	1) ___/Min.	2) ___/Min.	3) ___/Min.
Temperature	1) ___ °F	2) ___ °F	3) ___ °F

24 Defibrillation
Time Watt Sec Result
Time Watt Sec Result
Time Watt Sec Result

25 ECG ☐ 6 Lead ☐ 12 Lead ☐ Monitor Only
☐ NSR ☐ Atrial Fib. ☐ PVC Per Min.
☐ Sinus Arrhy. ☐ Atrial Flutter ☐ Vent. Tach.
☐ Sinus Brady ☐ Junctional ☐ Vent. Fib.
☐ Sinus Tach ☐ Inverted T Wave ☐ Asystole
☐ PAC ☐ QRS) .1 Sec. ☐ Idioventricular
☐ AV Block 1-2-3 ☐ Q Waves Present ☐ ST Elevation
☐ PAT ☐ Pacemaker ☐ ST Depression

22 IV Therapy
☐ Successful ___ GA. Angio.
☐ Unsuccessful ___ GA. Scalp
☐ Blood Sample

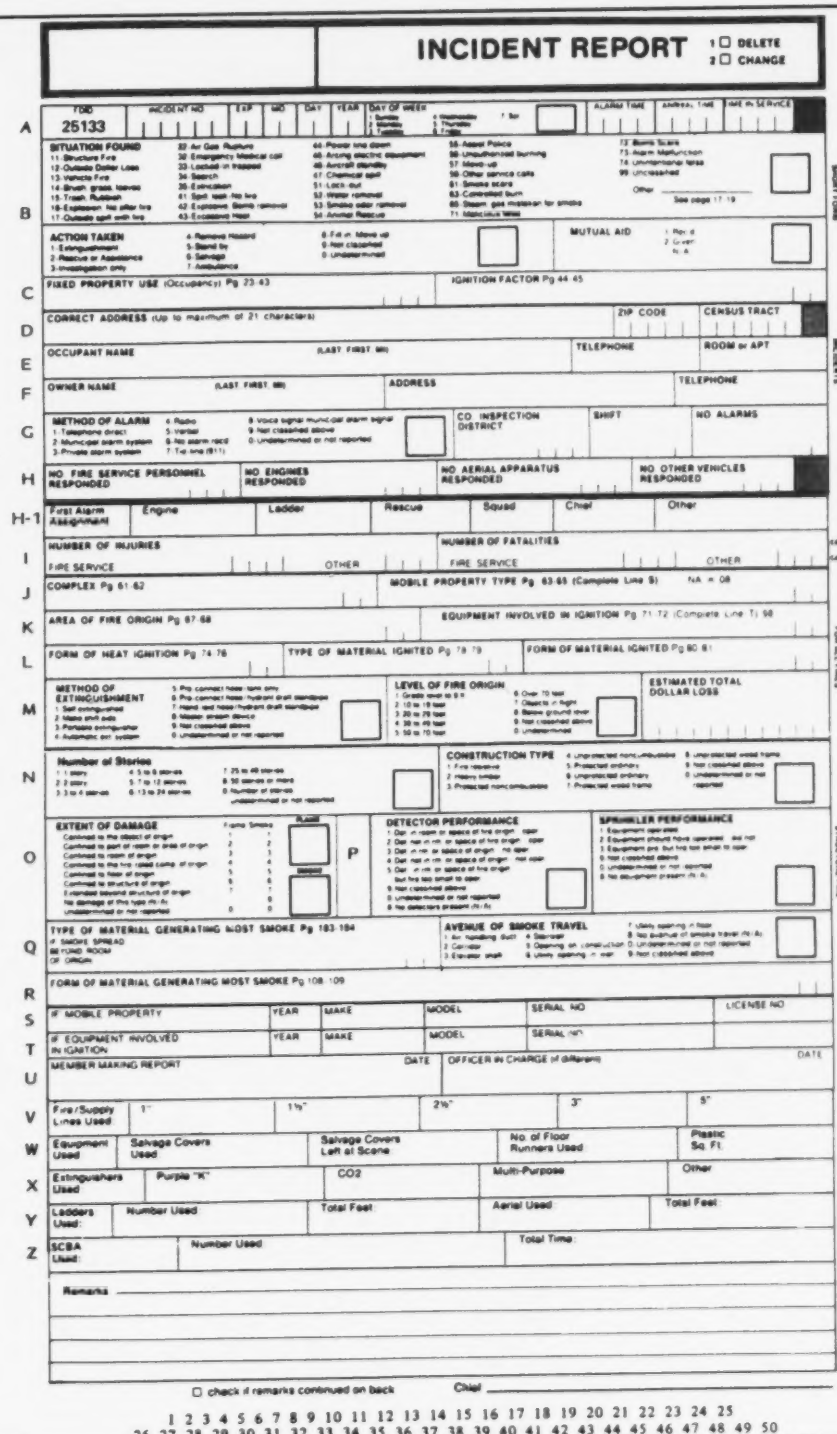
26 Remarks

Stand By Chief

WHITE - STATION COPY YELLOW - FILE COPY PINK - HOSPITAL COPY

Figure 4. Sample EMS Report

BEST COPY AVAILABLE



INCIDENT REPORT

1 ☐ DELETE
2 ☐ CHANGE

A — FDID 25133 | INCIDENT NO. | EXP. | MO. | DAY | YEAR | DAY OF WEEK (1 Sunday, 2 Monday, 3 Tuesday, 4 Wednesday, 5 Thursday, 6 Friday, 7 Saturday) | ALARM TIME | ARRIVAL TIME | TIME IN SERVICE

B — SITUATION FOUND
11 Structure Fire; 12 Outside Dumpster Loss; 13 Vehicle Fire; 14 Brush, grass, leaves; 15 Trash, Rubbish; 16 Explosion, no after fire; 17 Outside spill with fire; 20 Air Gas Rupture; 30 Emergency Medical call; 33 Locked in trapped; 34 Search; 35 Extrication; 41 Spill, leak, no fire; 42 Explosive, Bomb removal; 43 Excessive Heat; 44 Power line down; 46 Arcing electric equipment; 48 Aircraft standby; 47 Chemical spill; 51 Lock out; 52 Water removal; 53 Smoke odor removal; 54 Animal Rescue; 55 Assist Police; 56 Unauthorized burning; 57 Move-up; 58 Other service calls; 61 Smoke scare; 63 Controlled burn; 65 Steam, gas mistaken for smoke; 71 Malicious false; 72 Bomb Scare; 73 Alarm Malfunction; 74 Unintentional false; 99 Unclassified; Other ____ See page 17-19

ACTION TAKEN
1 Extinguishment; 2 Rescue or Assistance; 3 Investigation only; 4 Removed Hazard; 5 Stand by; 6 Salvage; 7 Ambulance; 8 Fill in, Move up; 9 Not classified; 0 Undetermined

MUTUAL AID
1 Rec'd; 2 Given; N A

C — FIXED PROPERTY USE (Occupancy) Pg 23-43 | IGNITION FACTOR Pg 44-45

D — CORRECT ADDRESS (up to maximum of 21 characters) | ZIP CODE | CENSUS TRACT

E — OCCUPANT NAME (LAST, FIRST, MI) | TELEPHONE | ROOM or APT

F — OWNER NAME (LAST, FIRST, MI) | ADDRESS | TELEPHONE

G — METHOD OF ALARM
1 Telephone direct; 2 Municipal alarm system; 3 Private alarm system; 4 Radio; 5 Verbal; 6 No alarm rec'd; 7 Tie line (911); 8 Voice signal municipal alarm signal; 9 Not classified above; 0 Undetermined or not reported
CO INSPECTION DISTRICT | SHIFT | NO ALARMS

H — NO FIRE SERVICE PERSONNEL RESPONDED | NO ENGINES RESPONDED | NO AERIAL APPARATUS RESPONDED | NO OTHER VEHICLES RESPONDED

H-1 — First Alarm Assignment | Engine | Ladder | Rescue | Squad | Chief | Other

I — NUMBER OF INJURIES: FIRE SERVICE | OTHER | NUMBER OF FATALITIES: FIRE SERVICE | OTHER

J — COMPLEX Pg 61-62 | MOBILE PROPERTY TYPE Pg 63-65 (Complete Line S) NA = 08

K — AREA OF FIRE ORIGIN Pg 67-68 | EQUIPMENT INVOLVED IN IGNITION Pg 71-72 (Complete Line T) 98

L — FORM OF HEAT IGNITION Pg 74-76 | TYPE OF MATERIAL IGNITED Pg 78-79 | FORM OF MATERIAL IGNITED Pg 80-81

M — METHOD OF EXTINGUISHMENT
1 Self extinguished; 2 Made shift with; 3 Portable extinguisher; 4 Automatic act system; 5 Pre-connect hose; hose only; 6 Pre-connect hose; hydrant shaft standpipe; 7 Hand, and hose; hydrant shaft standpipe; 8 Master stream device; 9 Not classified above; 0 Undetermined or not reported
LEVEL OF FIRE ORIGIN
1 Grade level to 9 ft; 2 10 to 19 feet; 3 20 to 29 feet; 4 30 to 49 feet; 5 50 to 70 feet; 6 Over 70 feet; 7 Objects in water; 8 Below ground level; 9 Not classified above; 0 Undetermined
ESTIMATED TOTAL DOLLAR LOSS

N — Number of Stories
1 1 story; 2 2 story; 3 3 to 6 stories; 4 5 to 6 stories; 5 7 to 12 stories; 6 13 to 24 stories; 7 25 to 49 stories; 8 50 stories or more; 0 Number of stories undetermined or not reported
CONSTRUCTION TYPE
1 Fire resistive; 2 Heavy timber; 3 Protected noncombustible; 4 Unprotected noncombustible; 5 Protected ordinary; 6 Unprotected ordinary; 7 Protected wood frame; 8 Unprotected wood frame; 9 Not classified above; 0 Undetermined or not reported

O — EXTENT OF DAMAGE
Confined to the object of origin; Confined to part of room or area of origin; Confined to room of origin; Confined to the floor of origin; Confined to the floor of origin; Confined to structure of origin; Extended beyond structure of origin; No damage at this type; Undetermined or not reported
Flame; Smoke; Water; P
DETECTOR PERFORMANCE
1 Det. in room or space of fire origin, oper.; 2 Det. not in rm. or space of fire origin, oper.; 3 Det. in rm. or space of origin, not oper.; 4 Det. not in rm. or space of origin, not oper.; 5 Det. in rm. or space of fire origin, but fire too small to oper.; 9 Not classified above; 0 Undetermined or not reported; 8 No detectors present
SPRINKLER PERFORMANCE
1 Equipment operated; 2 Equipment should have operated, did not; 3 Equipment prs, but fire too small to oper.; 9 Not classified above; 0 Undetermined or not reported; 8 No equipment present

Q — TYPE OF MATERIAL GENERATING MOST SMOKE Pg 103-104
If SMOKE SPREAD BEYOND ROOM OF ORIGIN
AVENUE OF SMOKE TRAVEL
1 Air handling duct; 2 Corridor; 3 Elevator shaft; 4 Stairwell; 5 Opening on construction; 6 Utility opening in wall; 7 Utility opening in floor; 8 No avenue of smoke travel; 0 Undetermined or not reported; 9 Not classified above

R — FORM OF MATERIAL GENERATING MOST SMOKE Pg 108-109

S — # MOBILE PROPERTY | YEAR | MAKE | MODEL | SERIAL NO | LICENSE NO

T — # EQUIPMENT INVOLVED IN IGNITION | YEAR | MAKE | MODEL | SERIAL NO

U — MEMBER MAKING REPORT | DATE | OFFICER IN CHARGE (if different) | DATE

V — Fire/Supply Lines Used | 1" | 1½" | 2½" | 3" | 5"

W — Equipment Used | Salvage Covers Used | Salvage Covers Left at Scene | No. of Floor Runners Used | Plastic Sq. Ft.

X — Extinguishers Used | Purple "K" | CO2 | Multi-Purpose | Other

Y — Ladders Used: | Number Used | Total Feet | Aerial Used | Total Feet

Z — SCBA Used: | Number Used | Total Time

Remarks

☐ check if remarks continued on back | Chief

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

Figure 5. Sample Incident Report

BEST COPY AVAILABLE

responding agency. Depending on the situation, a previously described condition or the victim's chief complaint at the time rescuers arrived at the scene may be the basis for the narrative of the action taken section. In any case, the majority of the data in the report will describe the treatment of the victim.

Treatment includes the use of splints, bandages, and dressings; placement of a cervical collar; use of a backboard; and any other action taken during the victim's treatment. If activity centered around searching for the victim or releasing the victim from some type of entrapment, the description explains in detail what was seen upon arrival, what kind of action was taken to prevent further injury to the victim, what method was used to free the victim, and other specific details. It is critically important to note if there were other medically trained personnel on the scene, specifically if a physician or a registered nurse treated to the victim.

Handling of Valuables

If a victim's valuables such as a billfold, purse, or jewelry were removed for safekeeping, indicate clearly on the report how the items were handled. If items are given to a police officer, include the police officer's name and badge number; if items are given to the commanding officer, indicate his or her name on the report; if the items accompanied the victim to the hospital, indicate how valuables were handled once the victim was at the hospital.

If in the process of performing a rescue valuable items are noticed and not handled, note this on the report. For example, if there are sterling silver items displayed in a home, indicate where they are located and their condition.

Personnel Section

Reports should note the number of rescuers sent to a scene and each rescuer's name. Note whether or not additional assistance was requested. Indicate notification of other authorities. For example, if there is a fatality associated with the incident, note that the local law enforcement agency and county coroner were notified, and note the time of notification.

The Signature

Finally, on every incident report, there is a place for the signature of the person filing the report. Remember, legal documents require signatures to complete the transmittal of information. Do not allow another person to sign your name. Allowing someone else to sign the report carries the risk that the report may be both inaccurate and forged. Before signing a report, make sure it reflects exactly what was seen and known about the incident.

OTHER REPORTS

The Maintenance Report

Reports also include the maintenance report associated with vehicle usage (see Figure 6). A checklist of regular maintenance and inspection items can be used. A vehicle inspection includes attention to how the vehicle handles, and to the brakes, the warning systems, and other systems. The report should also indicate fuel and oil usage, and the number of miles traveled.

RECORD OF MAINTENANCE TO APPARATUS

DATE	REPAIRS OR MAINTENANCE PERFORMED	MILEAGE	WHERE PERFORMED	BY WHOM

COMPANY _____ TAG NUMBER _____

Figure 6. Sample Maintenance Report

The maintenance report must be filled out **every time** the vehicle travels any significant distance. If it is driven from headquarters to the training grounds, document the mileage even though it is not an emergency run. Mileage figures are used to determine the vehicle's average fuel consumption and to calculate miles expended on emergency activities and miles used for other activities.

Items noted in the remarks section include notations that tools were broken or left at the scene, medical-treatment equipment such as splints were left at the hospital, supply trays are empty, etc. When the report is completed, review it and obtain the necessary signatures before filing.

The Training Report

Another report necessary for a rescue operation is the training report (see Figure 7). This report includes a summary of the monthly training sessions. List each training activity by subject. Include the length of time spent on a subject and a list of names of the people who attended the session.

Most organizations provide an annual guide for training, transmitted by the chief of the organization. The annual guide reflects the minimum training schedule of all materials to be covered throughout the year. An officer can look through a report and tell whether or not a unit is meeting the expectations of the department.

CONCLUSION

Many kinds of reports can be generated by a rescue operation. The types and number of reports are dictated by the size of the organization. Reporting and recordkeeping are not exciting activities. When a report is generated, it is for a specific purpose. It must reflect information that is noteworthy and necessary for the organization. Likewise, it must be completed accurately. Reports do not take precedence over victim care, but they are as important.

If a report has to be amended because of additional information, indicate that it has been amended and attach the additional information to the original report. Reports must be accurate. It is important to remember that a report subpoenaed into court may have been generated by someone who is no longer alive to defend an action or a statement. Medical reports are subject to subpoena years after an incident. Court decisions have extended the statutes of limitations for medical records to years beyond the seven-year mark. For this reason, a report must be properly completed so that it is self-explanatory.

TRAINING REPORT

Date ___/___/___ Starting Time _____ Ending Time _____

Total Time _____ Unit _____ Task Number: _____

Division Level _____ Company Level _____ Other _____

Officer: _____ Instructor(s) _____

Topic _____
(Describe instructional activity in detail or attach a lesson plan.)

The firefighters who participated in this activity, slash (/) the appropriate number(s).

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

If you were unable to have a training session today, briefly describe below.

Officer/FFIC Making Report _____ Date _____, 19__

Training Officer _____ Date _____, 19__

Figure 7. Sample Training Report

TOOLS AND EQUIPMENT FOR RESCUE OPERATIONS

KEY POINTS

- **The need for a community hazard survey**
- **The need for basic and specialized equipment and tools**
- **Factors to consider before purchasing a tool or piece of equipment**

INTRODUCTION

The ideal rescue service has all the tools, equipment, and trained personnel needed to extricate victims from potential hazards within its service area. This ideal is seldom realized, but measures can be taken to preplan for needs. Each community should conduct a hazard survey to identify potential problems and determine local needs. With the information and data gathered from a hazard survey, preplanning can be done, equipment and tools can be obtained, and resources can be identified that will enable a rescue service to deal with emergency situations.

Some basic rescue and extrication equipment is common to the rescue service such as tools for extrication, lighting equipment, and items required for routine rescue procedures. The need for specialized equipment can be determined as potential hazards are identified. For example, a waterfront community must have rescue boats and self-contained underwater breathing apparatus available, while a highly industrialized area needs to invest in equipment and tools to deal with hazardous materials incidents.

Factors to consider when ordering equipment and tools include the following:

- Department needs. The equipment selected should be based on the hazard survey and preplanning.
- Effectiveness of the item. Be sure to purchase the right tool for the job.
- Safety concerns. Consider the safety of the rescuer as well as that of the victim.
- Simplicity and ease of operation. Consider equipment and tools that are easy to operate.
- Serviceability. Be sure replacement parts are readily available and that the equipment can be serviced in the field.
- Versatility. The equipment or tools must be usable to perform many different tasks.
- Reliability. Be sure the equipment and tools are reliable.
- Durability. The item must be capable of operating efficiently in extreme environmental conditions.
- Compatibility. Equipment must be compatible with existing equipment.
- Size, weight, and storage requirements. Department facility and management requirements in this area must be considered.
- Cost. The most cost-efficient equipment for the job to be done should be purchased.

Each section of this manual will discuss different rescue problems and recommend equipment and techniques necessary to perform specific rescue evolutions. It is the responsibility of each rescue service to identify local hazard situations and the equipment and tools that will best suit its needs. In many rescue operations techniques and tools and equipment must be improvised, so it is important for rescuers to become familiar with the capabilities of the equipment available. During preplanning rescuers also need to become familiar with equipment and tools available from cooperating agencies.

CONCLUSION

To execute safe, effective, and efficient rescue operations, each community must assess its potential hazards and identify the tools and equipment it may need. Once the items have been obtained, rescue personnel should develop training procedures and practice mock situations to become proficient with the use of each tool and piece of equipment.

PLANNING FOR EMERGENCY OPERATIONS

KEY POINTS

- **The importance of emergency readiness**
- **Planning for a mass casualty**
- **Coordination of local personnel**
- **The requirements for emergency readiness**
- **The importance of emergency operations plans**
- **The planning process**
- **The basic plan and its annexes**
- **Managing an emergency**
- **Implementing the plan**
- **Reviewing the plan**
- **The functions of an emergency management agency**

INTRODUCTION

The emergencies addressed in this section apply to specific situations when government agencies must coordinate and direct the operations of the emergency services that are available in or to a community. The need for **coordinated** emergency operations distinguishes a major disaster or emergency from an emergency that local fire and police forces, or hospitals and doctors deal with daily. **Emergency management operations leadership roles may differ depending on state or local protocal.**

EMERGENCY READINESS

"Emergency readiness" means that a community is prepared to react promptly to save lives and property if threatened or hit by a disaster or major emergency. Preplanning must take place **before** an emergency arises.

A community must plan in advance how to deal with evacuation, temporary housing, search and rescue, providing immediate medical care, and other specialized needs that arise during an emergency disaster. During a hurricane or flood, it may be necessary to evacuate many people from low-lying areas, and then feed them and provide temporary housing until the danger is over. When a river is rising to flood stage a massive effort may be needed to strengthen dikes or levees. If a tornado or earthquake hits, the damaged area must be searched for injured people; the injured must be given first aid followed by professional medical attention as promptly as possible. In addition, the homeless must be fed and housed.

If a plane crashes into a town, an explosion occurs, or a large building collapses, it is necessary to get fire and medical units into the damaged area as quickly as possible. In addition to providing all the emergency services, it is important to have crowd control to keep curious spectators out of the area.

Similar emergency operations on a larger scale will be required if the United States ever encounters an enemy attack. In such a situation there may be an additional need to protect people from radioactive fallout.

The rescue, law enforcement, fire, engineering, and public health department personnel, doctors, and other health-care professionals are the front-line forces to take the lead in conducting lifesaving and property-preserving operations. State law enforcement, fire department, and other public service agencies from neighboring communities are often called for assistance.

In addition, citizen-volunteers are used for many services. For example, crews may be needed to fill sandbags and strengthen levees during a flood threat, or to help police and fire personnel search an earthquake-damaged area to rescue injured survivors. Crews are also needed for clean-up and other organized restoration activities after a tornado, hur-

ricane, or other major emergency.

Emergency readiness can be summarized by saying that during an emergency mission government agencies and other rescue personnel must be able to do the right thing at the right time. This includes procedures for coordinating the operations of rescuers, law enforcement officers, fire fighters, EMT personnel, hospitals, medical personnel, and all others with resources for helping during a large-scale disaster. (See the Incident Command System chapter for further information.)

MASS CASUALTY PLANNING

Triage, treatment, and transport of emergency victims are of utmost concern to the public safety service agencies in the event of a mass casualty incident. The terminology, responsibilities, and annexes must be common to all participating agencies. The designated incident commander will be coordinated with the nature of the disaster, i.e., a civil disturbance that ends with mass casualties shall be under the responsibility of the law enforcement agency in charge of the area.

A preplan must be developed for protocol of activating local, county, and mutual-aid resources. Each community needs to establish a plan of action for a mass casualty incident and determine local protocol for potential disasters.

Types of Incidents

A **mass casualty incident** refers to an incident where the number of victims exceeds the number of rescuers and the required resources to immediately triage, treat, and transport the victims.

A **limited-victim incident** refers to an incident where a full activation of the mass-casualty plan is not necessary; the number of victims indicates on-the-scene control and a limited amount of triage is necessary. Triage tags may be used if necessary. The limited number of victims is usually five and the maximum number for this type incident is approximately 20.

Standby Notification

Standby notification may be necessary for an incident where there may be a mass casualty incident even though it has not actually happened. The incident commander may choose to announce standby notification to rescuers who will be called if the mass casualty incident occurs. The emergency network includes emergency responders, cooperating hospitals, disaster services, The Red Cross, coroner, and other local public assistance agencies. Standby notification allows responders time to prepare for a mass casualty incident.

Hospital Care Facilities

Cooperating hospital. This hospital receives victim information and relays the information on to the receiving hospital. This facility also coordinates mental health counseling for all bystanders and personnel assisting with the rescue operations.

Receiving hospital. This hospital receives and cares for the victims. Information about each victim is relayed on to the American Red Cross and health and welfare agencies when necessary. Most hospitals have an internal disaster plan established by local protocol.

Children's Hospital. When an incident involves a large number of children who are injured or burned, these victims are sent to a children's hospital unless otherwise designated.

Coordination of Local Personnel

During a large-scale disaster an individual department must be aware of all the instructions issued by other agencies or departments. For example, during a fire emergency the water department can issue a call to the citizens to hold the use of water to a minimum so that water pressure can be maintained for the fire department. At the same time, fire officials may instruct citizens via the media to wet down their roofs with garden hoses. Such special efforts must be coordinated and prioritized.

REQUIREMENTS FOR EMERGENCY READINESS

Specific requirements for emergency readiness include the following:

- An emergency operating center where local officials can direct and control emergency operations. The mayor, chief of police, fire chief, civil defense director, and other officials located at this center must each have the same information about the emergency situation in order to coordinate decisions rapidly.

- Local government officials and community leaders should preplan what emergency actions are to be taken if the community is threatened or hit by a disaster. Different types of disasters should be simulated to test the plans.
- Community leaders must be ready to give emergency instructions and information to the citizens. People must be given practical information about how to deal with a disaster. Citizens seek instruction so that they can avoid injury and minimize damage to their property. People want down-to-earth advice from the government and tend to panic less when they are prepared.

  Use the local warning system to alert the public **before** a disaster occurs. Do not wait too long to broadcast reliable and official information. If a storm is threatening, alert the people who may be affected. Information and instructions must be broadcast repeatedly.

EMERGENCY OPERATIONS PLANS

An emergency operations plan contains information regarding protection for citizens and their property in the event of a disaster or a disaster-threatening situation. It describes actions required to handle any hazard, natural or technological, including the effects of a nuclear attack. It addresses the tasks to be conducted by specific agencies and organizations at specific places and projected times. It is based on established objectives, assumptions, and a realistic assessment of the capabilities of the responding agencies.

A local plan describes a community's approach to emergency planning, organization, and operations. The plan provides an emergency management system tailored to the particular needs of the jurisdiction, and the responsibilities generated by a large-scale disaster or disaster-threatening situation. It addresses an evacuation plan and identifies a specific shelter already in place that can be used to protect the population. The plan identifies resources and provides a system to ensure the orderly use of resources during a disaster.

Commonalities exist in the approach to emergency management for all hazards. This should be reflected in the emergency operations plan. Plans developed for one specific type emergency may be extremely useful for other emergency situations. A level of emergency operations capability is established by addressing general functions such as direction and control of the incident, the warning system, communications, evacuation routes, and shelter-provisions.

An emergency operation plan is a preplan that treats emergency management activities generically and can be used for a multitude of hazards, disasters, or emergencies. The plan provides general applicable information without referencing a particular hazard, disaster, or emergency. Unique characteristics and capabilities of the individual disaster agent are included in a hazard-specific appendices.

The Planning Process

Emergency planning is based on the principle that people support what they help to create. The plan should evolve through an organized process conducted by a team. The team includes representatives from each local government and agency with an emergency mission and from each nongovernmental group with an assignment, for example, the news media, the Red Cross, the Salvation Army, and others.

Comprehensive emergency management planning requires the government to mitigate, prepare for, respond to, and recover from a disaster. Such planning gives a community a sense of security.

As shown in Figure 8, the inner ring includes the mayor, city council members, the city manager, county commissioners, county judges, legal authorities, and other local personnel. The emergency manager's coordinating responsibilities are identified in the lower half of the ring. Various local departments surrounding the center or hub of the figure must take specific responsibility for parts of the comprehensive emergency management program. The local emergency manager coordinates the various department's emergency plans and functions.

The first two tasks are (1) to conduct a hazard analysis, or review and update the existing hazard analysis to identify the hazards that could affect the jurisdiction; and (2) to assess the jurisdiction's capabilities and resources available in the event of an emergency or disaster. Once these steps are completed a draft plan can be initiated.

The local plan may be simple or complex depending on the potential hazards in a community, the population at risk, and a community's resources and capabilities. A community with a large chemical manufacturing firm needs to draft a more detailed plan than a rural village with no industry. All plans should follow the same format. The basic plan is

Figure 8. Plan Format

usually no longer than 10-15 pages with approximately 14 appendices. The appendices coincide with the local jurisdiction's needs.

The Basic Plan

The basic plan provides an overview of each jurisdiction's approach to emergency management (see Figure 9). It is an umbrella plan that covers the general organizational and operational details. The plan establishes the structure reflected in the appendices to the plan.

The basic plan identifies the incident commander, summarizes the potential hazardous or emergency situations, explains the emergency operations, and describes the organization and details of the responsibilities for emergency planning operations.

The Annexes

The annexes are the parts of the plan that provide specific information and direction. They focus on operations and identify each function and who is responsible for carrying out each function. While the basic plan provides information relevant to the plan

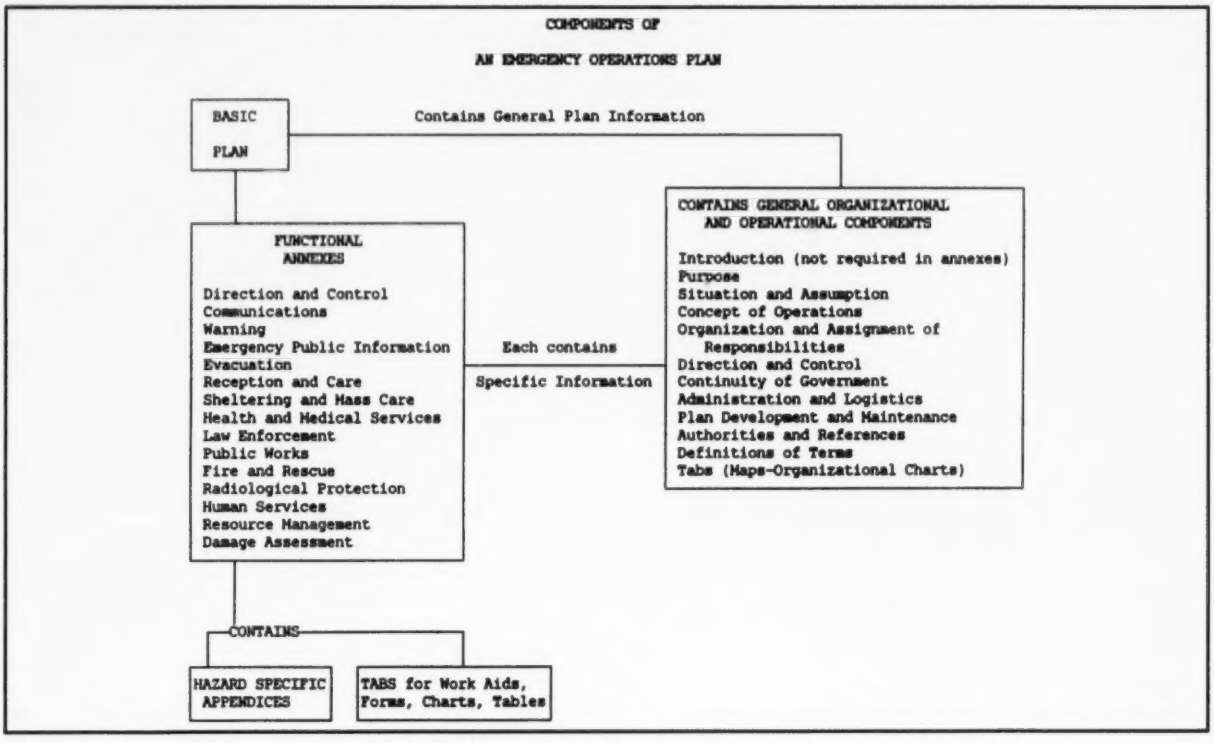


Figure 9. Components of an Emergency Operations Plan

BEST COPY AVAILABLE

as a whole, the annexes emphasize responsibilities, tasks, procedures, and operational actions. They identify activities to be performed by anyone with assigned responsibility explained under the identified function. They identify actions that not only ensure an effective emergency response but also aid in preparing for an emergency.

To be usable, the annexes must clearly define and describe the policies, procedures, and roles and responsibilities inherent in the various functions before, during, and after an emergency. To ensure adequate planning for all possible contingencies it is necessary to spend time projecting the consequences of various emergencies.

This activity should not be restricted to the hazards identified as the most threatening during the hazards analysis, but for any hazard. For example, an airplane crash can occur anywhere with little or no warning. Generic annexes are important parts of the plan since they are applicable to any unforeseen emergency.

The organization of the annexes should parallel that of the basic plan. Specific sections should be developed to expand upon—but not to repeat information contained in the basic plan.

Functions to Include as Annexes

One of the most important things to be done early in the planning process is to identify the functions for each separate annex. The choices are influenced by factors such as the organizational structure of the state and local government, the capabilities of each jurisdiction's emergency service agencies, and established policies with respect to the concept of operations.

No single listing of functional annexes can be prescribed for all jurisdictions. The primary concern is that all activities are covered in a plan. The categorization of the activities is of secondary importance; however to facilitate coordination a jurisdiction should strive for consistency among its departments and the local agencies.

Generic Annexes

Following are brief explanations of important emergency management functions.

Direction and Control. The direction and control of an incident involves the use of a centralized management center (the emergency operations center) to facilitate policy-making and the coordination and control of operating forces in the event of a large-scale emergency. This annex must address the process of obtaining and analyzing emergency management information to provide a basis for decision-making. It should describe the use of an alternate emergency operations center, mobile emergency operations center, and a field-command post. (For further information see the chapter Incident Command System)

Communications. Communications deals with establishing, using, maintaining, and providing backup for all channels of communication needed for an emergency response and recovery. This is a critical management function.

Warning. Warnings must be sent to the appropriate government officials and then to the general public in order to timely forecast all hazards that may require emergency preparedness or response actions. Existing warning systems must be identified and coordinatoed, and provisions must be made to implement them as needed.

The government unit must be able to obtain timely information with regard to impending threats to the jurisdiction and to transmit the information rapidly to local officials and citizens. It is especially important that clear directions be provided for the use of the Emergency Broadcast System (EBS) to warn the public. A backup system must also be in place. For example, a telephone network initiated at the management center can be used to confirm that schools have received the weather warnings issued by the National Weather Service as well as any other emergency warning issued. Descriptions of the warning systems that are in place within the jurisdiction, and the responsibilities and procedures for using the systems management functions.

Emergency Public Information (EPI). The goal of the emergency public information system is to increase public awareness of hazards and to provide active channels for informing and advising the public on appropriate actions before, during, and after an emergency. It provides for effective collection and dissemination of information to control rumors and to minimize dysfunctional public responses. It describes policies, roles, responsibilities, and procedures for communicating with the general public during several phases of emergency management, preparedness, response, and recovery.

Plans for developing and disseminating public information materials or preparedness and evacuation

procedures should be in place along with information about handling communications with the mass media during an emergency. Special attention must be given to ensure the proper use of the emergency broadcast system. Technical aspects of communicating with the public may be included. For example, a provision for remote transmission to the radio or television station from the emergency operations center.

Evacuation. The purpose of the evacuation process is to relocate people to a safe area when an emergency or the threat of an emergency occurs. Detailed procedures must be established for carrying out complete or partial evacuation of the people from the jurisdiction. Focus on movement by defining areas to be evacuated and designating safe areas where people are to go. Outline the approach for controlling the flow of traffic, and for ensuring an orderly return.

Reception and Care. Reception and care refers the designation of a location to care for the people within the boundaries of the residential jurisdiction in case of a partial evacuation. This location may also be used to provide care for people from other jurisdictions who may be directed to the area during a contingency plan.

This annex states the policies, procedures, and roles and responsibilities associated with providing housing, food, clothing, and other essentials to a large number of people who are displaced from their homes by a disaster. It also addresses problems inherent to establishing a sufficient number of centers, and activating a sufficient number of resources to care for people in need.

Inplace Protective Shelter. An inplace shelter is a designated location that provides appropriate shelter to protect people from the after-effects of a disaster. Use of shelters located in or near homes, schools, or places of work may be the most effective way to protect people and it may be the only alternative available. Address the conditions under which people should be placed in protective shelters and how a plan for their use can be implemented. Describe shelter facilities, their capacities, and other characteristics. Delegate the responsibility for shelter maintenance.

Health and Medical Care. This annex includes policies and procedures for mobilizing medical resources during a disaster and providing medical care for the population during emergency conditions. Attention must be given to public health problems in major emergencies, especially within a mass-care facility. Establish a mortuary facility for casualties.

In addition provisions must be made for portable toilet facilities and an emergency fresh water supply.

Law Enforcement. Law enforcement agencies should provide for sufficient resources to maintain civil order during an emergency situation. Responsibilities and procedures for maintaining security and order must be addressed during a crisis situation and the eventual recovery. Describe procedures for augmenting existing forces during an emergency.

In some localities it may be necessary to establish a procedure for animal control. Animals often become a problem during a storm, flood, or when traumatized.

Public-Works Operations. The public works function provides for emergency-response capabilities for the engineering, construction, and repair and restoration of essential public facilities and services. This includes the utilities that may be under control of private businesses. A means for debris clearance and post-disaster safety inspections of damaged structures must be included.

Public works personnel can provide for heavy-rescue operations and are responsible for establishing multipurpose staging areas. Effective public-works operations requires several detailed hazard-specific preplans.

Fire and Rescue. The fire department provides fire fighting and search and rescue services during and after an emergency. This annex addresses the policies, procedures, and responsibilities of fire prevention and fire fighting during a potential crisis situation. Also, roles and responsibilities must be clarified for search and rescue operations.

Procedures for implementing the use of fire and rescue resources must be identified. When rescue operations are not the responsibility of the fire department, the resource to be used must be identified.

MANAGING THE EMERGENCY

Radiological Protection

A means for radiation detection and the monitoring and controlling exposures in any emergency involving radioactive materials—including a nuclear power plant accident, a hazardous-material incident, or a nuclear attack must be identified in a preplan.

Human Services

Identify the delivery of human services such as counseling during a disaster situation. Also identify provisions for housing, food, and clothing during a disaster situation that does not require a mass-care system.

Resource Management

Resource management involves the coordination and use of personnel, equipment, supplies, facilities, and services during a disaster response and recovery. It must deal with the allocation of resources that may be scarce during an emergency situation. Emergencies usually restrict the normal flow of people, goods, and services. Also, address the jurisdiction's participation in resource clemency during a national emergency.

Damage Assessment

A plan for damage assessment ensures that personnel and procedures are available to provide preliminary estimates and descriptions of the extent of damage resulting from a large-scale disaster. Policies, procedures, and roles and responsibilities are usually defined in a disaster plan for situations that would call for a declaration of disaster by a state Governor or the President of the United States.

Implementing the Plan

Once a plan for a community's disaster preparedness system has been developed, it should be validated through a mock exercise. This allows the community officials to evaluate the capability of the emergency-management function. It also evaluates the validity of a plan, along with a jurisdiction's capability to deal with a large-scale emergency. During a mock exercise, the emergency operations center is activated and all participants, including elected officials and agency and department heads are alerted and assigned to respective positions. Communications are established where response forces actually participate. Time frames are established for completion of the actions and orders which generate a sense of urgency and add realism to the exercise.

A mock exercise reinforces established policies and procedures, helps with hospital accreditation, tests deployment of resources, and evaluates the available resource capabilities.

Reviewing the Plan

Continuous review and revision of the plan is necessary to incorporate changes that may take place in the potential hazards in a locale, available resources, or local, state, or federal policies. It is advisable to do a post critique of any emergency service provided and evaluate how suggestions can be applied to, or affect the basic plan.

An Emergency Management Agency (EMA)

Usually an emergency management agency is governed under regulations promulgated by a state's Governor. It coordinates all activities of the state departments and agencies when responding to a state of emergency is declared by the Governor. Upon declaration of such an emergency, the Governor or his or her representative, and the agency's director direct emergency operations from a state emergency operations center.

Depending upon the magnitude and severity of the emergency, state departments and agencies with an emergency assignment are notified to furnish a liaison officer to the state's emergency operations center.

Communications Systems

Radio and telephone communications must be in place at the center and each state agency must have an assigned position and telephone number in the center. The statewide disaster radio frequency should be made known to all participants.

A state usually has a four-fold mission during a declared emergency: (1) to warn the public, (2) to enact timely and effective employment of state resources in support of local government, (3) to coordinate and direct of restoration and recovery operations in the disaster area when such operations are beyond the capability of the local jurisdiction or when requested by proper local government authority, and (4) to assess damage and procure support and assistance from the federal government. Specific emergency management assignments and functions for the departments, agencies, and bureaus of the state are usually assigned by the Governor's office.

The state disaster plan, outlines guidelines for fire, police, and hospitals and emergency medical services. It discusses the coroner's responsibilities and authority, the funeral directors' plan for multiple-cas-

ualty deaths, and outlines criteria for hospital disaster plans. It also contains a listing of the special emergency radio frequencies.

When a disaster occurs, it is usually the policy of the state to respond using local and state resources, quasi-public resources, and resources of the federal government which can be provided without a Presidential-declared emergency. However, if the size and severity of the disaster warrants, the state's Governor may request the U.S. President to declare that an emergency or major disaster exists.

To obtain significant state assistance (primarily from the National Guard), the chief executive of a jurisdiction must submit a request for such aid directly to the Governor along with advance information concerning the situation. Depending on the urgency of the situation, a telephone request is sufficient to initiate preliminary state actions, but it must be immediately followed by a written or telegram request. All requests should include the following information:

Natural or caused disasters

- Specific type of help needed
- Name and title of individual making the request
- Description of disaster
- Estimate of number of persons affected and property damage
- Action taken by local authorities

Civil disturbances

- Name and title of individual making request
- Estimated number of persons involved and identity of each group
- Number of law enforcement officers available and dedicated to scene
- Statement of action taken

Minor emergencies take place throughout the country nearly each month in which some state aid is needed. However, whenever the National Guard is called, the governor must issue a signed proclamation declaring that an emergency exists and authorize the use of the National Guard for assistance. This proclamation is necessary for the protection of the individual guardsman or guardswoman.

CONCLUSION

The steps required to complete an emergency operations plan include the following:

- Form a planning team with representation from the local government, agencies, and organizations with emergency management assignments or roles. Do not work in a vacuum.
- Complete a local hazard analysis and assess local resource capabilities.
- Develop a basic plan that includes policies, identification of legal authority, concept of operations, and the structure and tasks for an organization.
- Select the functions to be addressed in the annexes of the plan.
- Implement the basic plan through a mock exercise.
- Review and revise the plan.

The key to a successful emergency preparedness program is to gain the support and have active participation of the local officials. The degree of concern and the leadership exercised by the local officials dictates the level of effort and readiness a community has to meet an emergency.

INCIDENT COMMAND SYSTEM

KEY POINTS

- **The importance of an incident command system**
- **The components of an incident command system**
- **How to implement an incident command system**

INTRODUCTION

Disaster situations and large-scale emergencies happen more frequently each year. With today's sophisticated communications systems and rapidly-changing technology, it is possible to save more lives and property than ever before. A major component of a safe, effective rescue department is its management system.

The incident command system (ICS) is a systematic approach to identifying responsibilities and the chain of command. The ICS provides a method for effectively controlling rescue personnel, equipment, and communications simultaneously during an emergency. The ICS can be implemented during an emergency of any size, ranging from a single-unit response to an individual emergency to a large-scale disaster. An effective incident command system must have the following components:

- Preplanning
- Organization
- The Hierarchy of Command
- The Communications System
- Designated Facilities
- Management of Resources

ORGANIZATION

As the size of an emergency situation increases, the need for organization of the personnel increases. Likewise, the size of the command staff must increase in proportion to the size of the rescue staff. An incident commander needs to assign responsibilities as necessary (see Figure 10).

The incident commander should appoint three officers to report directly to him or her; a safety officer, a liaison officer, and an information officer. The **safety officer** is responsible for the safety of

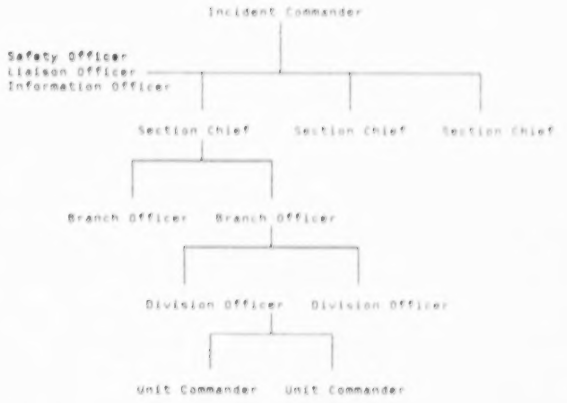


Figure 10. The Organizational Chart

the personnel involved in the rescue operation. This officer evaluates the safety issues of the evolutions as they are performed, and has the authority to halt any activity when an unsafe environment or hazardous condition exists.

The **liaison officer** is responsible for coordinating the activities of the agencies assisting with the incident. He or she acts as the point of contact for the designated representative of each agency.

The **information officer** is responsible for gathering all information pertaining to the incident—the cause, the agencies responding, the activities undertaken, and other details. This officer has direct contact with the media and is the only person other than the incident commander who makes public statements about the status of the incident.

In addition, the following personnel should be identified as needed.

Section chief. A section chief is assigned for each specific entity as required by the size of the emergency. For example, a section chief is needed to coordinate public safety services (fire, emergency

medical service, and law enforcement); another chief is needed to coordinate ground support services (fuel and food provisions, sanitation provisions, etc.); and a third is needed to handle the logistics of the incident (equipment needs, Red Cross involvement, communication bases, etc.). It is important to remember that section chiefs have the authority to delegate and that the number of section chiefs required is dictated by the size of the emergency.

Branch officer. Branch officers are appointed by the section chiefs as needed. A branch officer is the person who reports the activities of assigned agencies to the specific section chief. A section chief in charge of public safety services may have a branch officer for each service—the emergency medical service, the fire service, and the law enforcement agencies.

Division officer. A division officer may be assigned to oversee each law enforcement agency, each fire service involved, etc.

Unit commander. The unit commander is the person in charge of each unit performing a job.

A given incident may need only a section chief to handle all the operations; the incident commander should assess the situation and delegate assignments and authority as necessary. The number of officers depends on the size of the emergency. Additional positions are delegated **only** when the size of the incident requires additional command positions.

The span of control for the incident commander is determined by the size and scope of the incident and the concern for safety. The average command staff has five to seven people. Limiting the span of control assures the incident commander that more control can be maintained and that personnel will be functioning in their assigned roles.

The Hierarchy of Command

Advance planning must be done by agencies that may be called upon to assist in a large-scale emergency. This requires a cooperative effort among all agencies that may have a role in an emergency. The overall commander of a specific incident should be the person from the agency with the greatest involvement in the emergency. It is important for all personnel from all agencies responding to the emergency to recognize who the incident commander is and agree to his or her appointment.

Planning and decision making are the responsibility of the incident commander and the command staff. The personnel involved in these processes will be representatives of the organizations responsible for the rescue operation at the location of the incident. The fire department, the emergency medical service, the rescue unit, and representatives from involved public utility companies might all be included in the planning.

It is recommended that a joint effort be made among potentially involved agencies to discuss and preplan any foreseeable emergency. Objectives and strategies can be developed prior to any emergency. Conducting a disaster drill allows a community to be prepared for an incident and also test the readiness of the personnel involved.

Preplanning

Preplanning is a must. Effective preplanning and the development of standard operating procedures allow a predetermined course of action to take place when responding to an incident. Such a plan begins with the first responding unit and all involved (agencies) through the completion of the rescue operation.

Preplanning can involve establishing a simple operating procedure or a complex written plan of action for a large-scale emergency. Items to be addressed during preplanning include the span of control limits, potential staging areas, resources available, identification of hazard areas, and identification of agencies available to respond and the service each agency can provide.

The Communications System

All working units at an incident must have access to integrated radio communications. On-site telephone units and a public address system with all radio frequencies predetermined should be available to the rescuers.

Communications at all incidents should be kept at a minimum to avoid tying up phone lines and available frequencies. Rescuers must limit radio use and speak only in conversational English, avoiding the use of codes and signals.

In the event of a large-scale disaster, a central point should be established for all communications. The central point may be in a centrally-located vehicle, a building, or a nearby open area. To facilitate more accurate communications, locate this point at or near the command post.

Designated Facilities

An effective incident command system must have designated facilities on-site at each emergency. These should include the following:

The command post. The command post is a station from which all operations can be directed. This post is the central location for the commander of the incident and all immediate staff. All responding organizations and agencies report to this post, and it is the center for communications. The command post should be located in close proximity to the incident scene, and at a point with easy access, away from the noise of the incident, and away from the direct route of the rescuers.

The staging area. The staging area is a designated area where all equipment is kept until actually needed at the scene. This area may be three to five minutes away from the incident scene, with adequate space for parking and maneuvering of equipment. A staging officer must be assigned to manage equipment and maintain constant contact with the incident commander.

In the case of a large-scale emergency, it might be necessary to have a prestaging area to avoid congestion at the main staging area. A second staging officer will be needed to supervise activities at a prestaging area. This person must be in direct contact with the first staging officer. During preplanning activities it is often possible to determine staging area sites for target hazards.

Management of Resources

It is often more effective and efficient to respond to an emergency as one combined unit rather than as separate resource units. A **single resource** is any individual piece of equipment that responds to an incident. This may be a heavy-rescue unit, an ambulance unit, or a fire engine or ladder truck. A **task force** may consist of a combination of rescuers, ambulances, or other safety service units.

The task force should share a common radio frequency and have a command structure and a predetermined leader appointed to be responsible for the operations of all the units in the task force. The task force allows the incident commander to use specialized groups of resources to execute specific tactics. Using the task force concept removes the incident commander from the responsibility of managing any single resource unit, and provides for a more efficient operation.

IMPLEMENTATION OF THE INCIDENT COMMAND SYSTEM

To assure that an incident command system is implemented within an agency the following steps should be followed:

- Analyze the command system
- Determine objectives
- Develop a training program
- Implement the system
- Evaluate the system's effectiveness
- Review and revise the system

An incident command system cannot be put into place overnight. Such a system is most effective when an agency develops and implements it for day-to-day operations.

Analyze the Command System

To establish a command system for an emergency, analyze past incidents and determine what command system was the most effective. The analysis must be done objectively by a cross section of personnel, with representation from each responding organization, not just by the chief officers and administrators.

Gather information by interviewing members of each organization from each agency involved in the incident. After the data is collected, divide the members of the organization into groups by category (organization, communications, command structure, preplanning, span of control, facilities, and management of the resources) and evaluate the system.

Determine Objectives

After the initial listing and classification of problems has been completed, establish a committee to determine the objectives of the ICS program. When developing a program, attempt to define procedures to address the problems already identified. Solving problems not only allows the organization to make immediate improvements to standard operating procedures, but also proves that the ICS program is effective, thus gaining support for the system.

The program objectives should address all the components of the ICS system and give consideration to the various types of applications. The ICS system is designed to work for a small or large incident and the involvement of many different organizations. The

objective statements (1) explain how the ICS is expected to work within the organization and (2) strategies for implementing an ICS training program.

Develop a Training Program

A training program must be developed to implement an effective incident command system. An ICS is integrated into the daily operations of an organization. The training should explain the history of the system, why ICS is being developed, and what it will do for an organization. The training program must stress that the ICS is to be used for every incident, regardless of its size. (If all department members are familiar with the ICS process, when a large-scale incident does occur, a larger command structure and a communications network can be effectively implemented.) Training should also stress the importance of preplanning and show how it relates to effective incident management.

The actual content and delivery of the training is at the discretion of the organization. Training should be reviewed regularly and supplemented by outside training, either at the state level, such as at seminars presented at a state-sponsored fire school, or at the federal level, at seminars conducted by the National Fire Academy. The purpose of training is not only to teach the members of the organization about the incident command system, but also to help them integrate it into daily operations.

Implement the System

The ICS should be used daily. During the initial implementation, conduct at least two disaster drills, with multiple agencies responding, to determine the effectiveness of the system. Involve any agency that is normally used during a large-scale incident. The type of incident simulated for the drill should be one that requires maximum interaction of all of the agencies involved.

Evaluate the System's Effectiveness

Complete an evaluation form after every run that requires the response of more than one unit. This evaluation gives those in charge an opportunity to evaluate how the ICS is being used and whether it is effective. Conduct written and oral critiques after each incident to ensure that information is available for evaluation. Evaluate the activities for 50 to 200 calls. This is a sufficient number of runs to determine if the system is working.

Review and Revise the System

Review the information gained from the evaluation of the system and revise as necessary to ensure the system's effectiveness. In addition conduct ongoing analyses of command problems so that new problems encountered can be dealt with effectively and expediently. Emergency service organizations are faced with constant change, which makes continuous review and revision necessary.

CONCLUSION

The incident command system is not intended to solve all the management problems of an emergency service, but it does serve as a management tool for controlling operations at the scene of an emergency. Regardless of the size of an organization, the incident command system allows for orderly control and the management of a large number of personnel and many pieces of equipment. The system requires extensive planning before it is put into use, and regular review to remain current with new procedures and equipment.

DEALING WITH NATURAL DISASTERS

KEY POINTS

- **Winter storms**
- **Preparing for a winter storm**
- **Tornadoes**
- **Safety precautions prior to and during a tornado**
- **After a tornado**
- **Forest and wildland fires**
- **Earthquakes**
- **After an earthquake**
- **Floods**
- **Before, during, and after a flood**

INTRODUCTION

The information presented in this section provides suggestions to local officials in small communities and rural areas to deal with natural disasters. Included is basic information about several civil emergencies that can occur in many communities.

Dealing with natural disasters is handled differently for different communities and in the various areas of the country. The information provided includes some basic detail about each type of disaster, and precautions and suggestions about how to deal with a situation in advance of, during, and after an incident. Many of the suggestions should be disseminated to the general public through public agencies or during mock disaster operations. This information is noted in the text.

Winter Storms

Warning Responsibility

The National Weather Service is responsible for the timely issuance of weather warnings to the public, including the approach of a winter storm.

Winter Storm Terminology

Freezing rain or drizzle is called an **ice storm,** i.e., moisture that falls in liquid form and freezes upon impact. The term **heavy** is used to indicate an ice coating sufficiently heavy to cause significant damage to trees, overhead wires, and similar objects.

An ice storm is sometimes incorrectly referred to as a **sleet storm.** Sleet is easily identified as frozen rain drops (ice pellets) which bounce when hitting the ground or other objects. Sleet does not stick to trees and wires; however, sleet in sufficient depth causes hazardous driving conditions.

When the word **snow** is predicted in a weather forecast, without a qualifying word such as **occasional** or **intermittent,** means that the fall of snow is of a steady nature and will probably continue for several hours.

Heavy snow warnings are issued to the public when a snow fall of four or more inches is expected within a 12-hour period, or a snow fall of six or more inches is expected within a 24-hour period. Some variations of these rules may be used in different parts of the country. In an area where a four-inch snowfall is common, the emphasis on heavy snow is generally associated with six or more inches of snow fall. In other parts of the country where heavy snow falls are rare, or in a metropolitan area with heavy traffic, a snowfall of two or three inches justifies issuance of a heavy-snow warning.

Snow flurries are defined as snow falling for a short duration at intermittent periods; however, snowfall during flurries may reduce visibilities to an eighth of a mile or less. Accumulation from snow flurries is usually small.

A snow squall is a brief, intense fall of snow accompanied by a gusty surface wind that is comparable to a summer rain shower.

Blowing snow and drifting snow result from

the combination of strong winds and falling snow or loose snow lying on the ground. **Blowing snow** is defined as snow lifted from the ground surface by the wind and is blown about restricting horizontal visibility.

Drifting snow indicates that strong winds are blowing fallen or loose snow lying on the ground surface into significant drifts. In the northern plains of the United States the combination of blowing and drifting snow after a substantial snowfall is called as **ground blizzard.**

A **blizzard,** the **most dramatic** of all winter storms, is characterized by low temperatures and strong winds bearing large amounts of snow. Most snow accompanying a blizzard consists of fine, powdery snow particles which are whipped in great quantities and limit visibility to only a few yards.

A **blizzard warning** is issued when winds at 35 mph or more are accompanied by falling or blowing snow and temperatures of 20°F or less, and the conditions are expected to prevail for an extended period of time.

A **severe blizzard warning** is issued when a blizzard with wind speeds of at least 45 mph is expected and is accompanied by a dense falling or blowing snow and a temperature of 10°F or lower.

A **cold-wave warning** indicates an expected rapid drop in temperature within a 24-hour period and requires substantially increased protection to agricultural, industrial, commercial, and social activities. Temperature drops and minimum temperature readings required to justify a cold-wave warning varies with the changing of the seasons and the geographic location. Regardless of the month of the year or the section of the country affected, a cold-wave warning flags an alert that a change to very cold weather requires greater protective measures.

A **hazardous-driving (traveler's) warning** is issued to indicate that falling, blowing, or drifting snow, freezing rain or drizzle, and sleet or strong winds will make driving conditions difficult.

A **stockmen's warning** alerts ranchers and farmers that livestock will require protection from a large accumulation of snow or ice, a rapid drop in the temperature, or strong winds.

A strong wind speed calculated with a low temperature is referred to as the **wind-chill factor** and causes the rapid cooling of exposed surfaces. Unprotected portions of the body such as the face or hands chill rapidly and must be protected during a low wind-chill temperature. In some areas of the U.S., the National Weather Service continuously issues the **wind-chill index.** The following descriptive scale compares a 20°F temperature calculated with different wind speeds (see Figure 11).

PREPARING FOR A WINTER STORM

Rescue personnel can prepare for a winter storm by checking to the latest National Weather Service warnings and bulletins given on the radio or television. Warn residents to make necessary trips for supplies before a storm develops, not during the storm.

The following information should be provided to the general public.

Check battery-powered equipment before a storm arrives. A portable radio or television may be the only contact with the world outside the winter storm. Also check emergency cooking facilities and obtain working flashlights.

Check the supply of heating fuel. Fuel carriers may not be able to move if a winter storm buries an area in snow. Arrange for emergency heat

Wind Combined With Temperature 20° F	Wind-Chill Index (Equivalent Temperature)	Forecast Descriptive Term
10 mph	2° F	Very cold
20 mph	-9° F	Bitter cold
35 mph	-20° F	Extreme cold

Figure 11. Wind Chill Index

supply in case of power failure. Be sure camp stoves and lanterns are filled with fuel.

Check the food supply. Supplies should include food that requires no cooking or refrigeration in case of a power failure.

Be watchful of fire hazards. Overheated coal- or oil-burning stoves, fireplaces, heaters, or furnaces can cause a fire.

Stay indoors during a storm or cold snap unless in peak physical condition. If it is necessary to go outside, avoid overexertion. Do not overdo shoveling snow. This is extremely hard work for anyone in less than prime physical condition and can bring on a heart attack.

Dress to fit the season. If necessary to spend time outside in the weather wear loose-fitting, lightweight, warm clothing in several layers. If necessary layers can be removed to prevent perspiring and a subsequent chill. Wear outer garments that are water-repellent, and have hoods to protect the head. Cover the mouth to ensure warm breathing and protect the lungs from extremely cold air. Remember, entrapped, insulating air, warmed by body heat is the best protection against the cold. Layers of protective clothing are more effective and efficient than a single layer of thick clothing. Mittens that are snug at the wrists provide better protection than fingered gloves.

An automobile can be a best friend or worst enemy during a winter storm, often depending on the care it is given. Have each vehicle **winterized** before the storm season begins. The following items should be checked before the winter storm season.

- Ignition system
- Battery
- Lights
- Cooling system
- Fuel system
- Lubrication
- Defroster
- Exhaust system
- Snow tires and/or chains
- Heater
- Brakes
- Antifreeze
- Wiper blades
- Winter-grade oil

Winter Storm Car Kit

The following information should be provided to the general public.

Be equipped for the worst. Carry a winter storm kit in the car, especially if cross-country travel is anticipated or if residing in the Northern States.

Items to consider for a travel kit include the following: blankets or sleeping bags, matches and candles; an empty coffee can with a plastic cover; extra clothing; high-calorie, nonperishable food; a compass and road map; a knife; a first aid kit; a shovel; a container of sand; a flashlight or signal light; a windshield scraper; booster cables; tow chains; a fire extinguisher; and an axe.

Winter travel by automobile is serious business. Keep the following suggestions in mind during a severe storm.

1. If the storm exceeds or even tests a person's limitations, seek refuge immediately.
2. Plan the travel route and select a primary and an alternate route.
3. Check the latest weather information.
4. Try not to travel alone.
5. Travel in convoy with another vehicle if possible.
6. Always fill the gasoline tank before entering open country, even for a short distance.
7. Drive carefully and defensively.

Tips if Trapped in a Vehicle During a Blizzard

The following information should be provided to the general public.

Avoid overexertion and exposure. Exertion from attempting to push a vehicle, shoveling heavy drifts, and performing other difficult chores during the strong winds, blinding snow, and bitter cold of a blizzard may cause a heart attack—even for people in good physical condition.

Stay in the vehicle. Do not attempt to walk out of a blizzard. Disorientation comes quickly in blowing and drifting snow. Being lost in open country during a blizzard can mean certain death. A person is more likely to be found and is better sheltered in a vehicle.

Do not panic.

Keep fresh air in the car. Freezing wet snow and wind-driven snow can completely seal the passenger compartment. Beware the gentle killers, carbon monoxide and oxygen starvation. Run the motor

and heater sparingly, and only with the downwind window open for ventilation.

Exercise by clapping the hands and moving the arms and legs vigorously from time to time. Do not stay in one position for a long period of time.

Turn on the dome light at night to make the vehicle visible to work crews.

Keep watch. Do not permit all vehicle occupants to sleep at one time.

Precautions for Livestock Care

A blizzard takes its toll on livestock. For both humane and economic reasons farmers must be notified to take necessary precautions to care for livestock in advance of a severe storm.

Move livestock, especially the young, into sheltered areas (frequently called **shelter belts**). A shelter belt provides better protection for range cattle than a shed-type shelter which may cause cattle to overcrowd and cause the animals to overheat and have respiratory problems.

Range cattle are hardy and can survive extreme winter weather if some nonconfining type of shelter from the wind is available and feed is provided at frequent intervals. Autopsies done on cattle killed by winter storms have shown the cause of death to be dehydration, not cold exposure or suffocation. Haul extra feed to feeding areas before the storm arrives. Storm exposure of long duration is the largest cause of livestock loss. If a storm lasts more than 48 hours, provide emergency feed.

Since cattle can seldom lick enough snow to satisfy their thirst, heat the water tanks to provide water and feed during prolonged exposure to storm conditions.

TORNADOES

A tornado is a violent local storm with whirling winds of tremendous speed. A tornado appears as a rotating, funnel-shaped cloud which extends toward the ground from the base of a thundercloud (see Figure 12). It varies from gray to black in color. The tornado spins like a top and may sound like a roaring airplane or locomotive. These small short-lived storms are the most violent of all atmospheric phenomena and in a small area the most destructive.

Notification of tornado conditions are issued in two statements.

A **tornado WATCH** means tornadoes are expected to develop.

A **tornado WARNING** means a tornado has actually been sighted or indicated on radar.

Warnings

The National Weather Service issues severe weather warnings to the public over radio and television stations. In addition some communities have a local alarm system.

Radio and television stations broadcast the latest severe weather warnings and tornado watch information. Local advice and instructions for safety are also issued over these stations.

Knowing what to do when a tornado is approaching may mean the difference between life or death. If a revolving, funnel-shaped cloud is seen on a cloudy day call the local police department, sheriff's office, or National Weather Service office immediately. Do not use the phone to obtain information and advice, listen to the radio or television station.

Safety Precautions Prior to and During a Tornado

The following information should be provided to the general public.

- When a TORNADO WATCH is announced:
  - Listen to a radio or television station for the latest weather warnings and advisories. If power fails use a portable battery-powered radio or car radio.
  - Watch the sky, especially to the South and Southwest. When a tornado watch is announced during the approach of a **hurricane,** remember a tornado may move from an Easterly direction.

- When a TORNADO WARNING is announced:
  - Move to an underground shelter or cave, or a steel-framed or concrete building. If such a shelter is not available take refuge in other places. If there is no basement, take cover under heavy furniture on the ground floor in the central part of the building, or in a small room on the ground floor away from outside walls and windows. As a last resort, go outside to a nearby ditch, excavation area, culvert, or ravine.

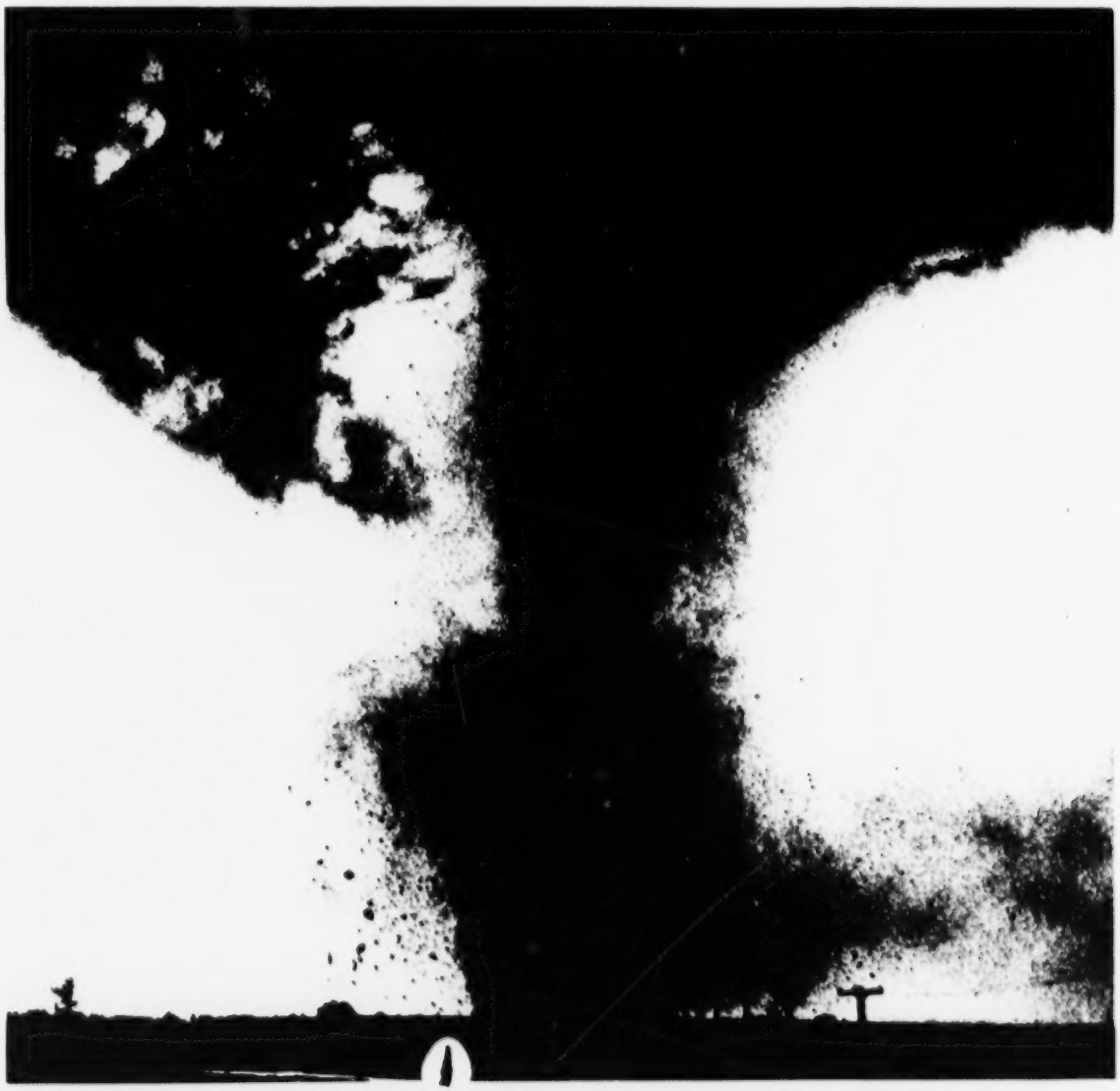


Figure 12. Typical Funnel-Shaped Tornado

- Open doors and windows on the side of a house away from the tornado to help reduce damage to the building. Stay a safe distance away to avoid flying debris.
- Do not remain in a recreation vehicle, or mobile home if a tornado is approaching; move to shelter.
- If located directly in the path of a tornado and if time permits, shut off electricity and fuel lines.
- If driving in open country, drive away from the tornado's path and at a right angle to it. If there is not time to leave the area take cover or lie flat in the nearest depression such

as a ditch, culvert, excavation, or ravine.
- If in a school building made of steel or reinforced construction remain near an inside wall on the lowest floor away from the windows. Avoid an auditorium or gymnasium with a large, unsupported roof span. Move occupants from a rural school or one that does not have reinforced construction to an area providing the best possible protection.
- Move occupants in an industrial facility to sections offering the best possible protection in accordance with advance plans. Shut off electrical circuits and fuel lines.
- Move occupants in a shopping center to a designated shelter area, **NOT** to a parked car.
- Move occupants in an office building to an interior hallway on the lowest floor or to a designated shelter area. Stay away from windows and doors.

Safety Measures After the Tornado

The following information should be provided to the general public.

- Use extreme caution when entering or working in a building that may have been damaged or weakened by the disaster. Also, watch for gas leaks or shorted electrical circuits. Stay away from fallen electric wires.
- Do not take lanterns or torches into buildings that have been damaged by the disaster, there may be leaking gas lines or flammable materials present.
- Check for leaking gas pipes in homes. Do this by smell, do not use a match or candle. If gas is suspected, open all windows and doors, turn off the main gas valve at the meter, leave the house immediately, and notify the gas company, law enforcement personnel, or fire department. Do not re-enter the house until it is checked.
- If any electrical appliance is wet, turn off the main power switch, unplug the wet appliance and dry it out (Caution: Do not do this while standing in water.) If fuses blow when the electric power is restored, turn off the main power switch immediately and inspect the building for short circuits in the wiring, appliances, and equipment.
- Check food and water supplies before using. Foods that require refrigeration may be spoiled if electric power has been off.
- Stay away from disaster areas. Sightseers interfere with the rescuer's work.
- Do not drive unless necessary. If necessary to drive watch for hazards and report them to the local law enforcement personnel or fire department.
- Report broken sewer or water mains to the local water department.
- Stay tuned to a radio or television station for advice and instructions from the local officials regarding the following:
  a. Where to obtain necessary medical care in the area
  b. Where emergency assistance for housing, clothing, and food can be sought
  c. Ways to help the community to recover

FOREST AND WILDLAND FIRES

Forest fires can occur at any time of the year but mostly during dry, hot weather of long duration. Most forest fires are caused by human carelessness, negligence, or ignorance. Forest-fire prevention requires an understanding of the importance of the forests, an awareness of the danger of fire in a wooded area, and a sense of personal responsibility to safeguard the forests.

Forest fires can start without warning. The federal and state government offices maintain a surveillance system of watch towers and aircraft to monitor potential or active fire locations. Personnel in these offices determine the location of fires, issue warnings, and initiate emergency actions. Many localities have a prearranged warning system to network advisory messages.

In Case A Forest Fire Threatens

The following information should be provided to the general public.

In the event a forest fire threatens a community follow the suggestions listed below:

- maintain a close watch of the fire by listening to the local radio or television station. Knowing what to do when a forest fire threatens may mean the difference between life or death. If such a threat is noticed, report it immediately to the local law enforcement department, fire department, or fire officer. Do **not** use the phone to obtain information.

- Check garden hoses and water supplies for possible use in wetting down roofs if necessary
- Extinguish all fires in homes and other structures
- Extinguish all camp fires
- Clear all combustible materials, specifically piles of brush that may be hazardous to homes or other structures
- If time permits, clear flammable vegetation away from up to 30 feet of homes or other structures
- Close all windows (cover if possible), remove combustibles near windows and other openings, and protect and secure livestock and pets
- Be prepared to assist in constructing community firebreaks
- Obtain complete information on exit routes and relocation areas if evacuation is necessary

Community Involvement in Dealing with a Forest Fire

Citizens must cooperate with authorities and be aware of the progress of the fire by listening to the local radio or television station. During an evacuation everyone must follow directions for safe exit routes. Do not use fire fighting entrance routes reserved for emergency service only. All people not involved in the rescue operations must keep clear of fire area. All volunteers assisting with the rescue must be under the supervision of a designated fire fighter. All safety precautions must be followed to prevent getting trapped. Ground winds can cause shifting. Follow instructions to the public and keep informed. Know where the fire is active and know the escape routes. Rescuers must maintain communication with the incident commander and stay calm.

EARTHQUAKES

An earthquake is a shaking or trembling of the crust of the earth caused by underground volcanic forces or by breaking and shifting of rock beneath the earth's surface.

Many natural hazards can be detected before the threat to life matures; however, this is not true for an earthquake. The U.S. Geological Survey Department monitors global earthquake activity and crustal movements, measures earthquake effects on buildings, and seeks to learn advance signals an earthquake may produce. The National Oceanic and Atmospheric Administration detects and warns against Pacific tsunamis (tidal waves generated by some earthquakes).

Dealing with an Earthquake

The actual earth movement during an earthquake is seldom a direct cause of death or injury. However, this movement causes collapse of buildings and other structures. Most casualties result from the following:

- Falling bricks or walls
- Splintering glass
- Toppling furniture, collapsing walls, or falling pictures and mirrors
- Rock slides on mountains or hillsides
- Fallen power lines
- Sea waves generated by earthquakes
- Fire resulting from broken gas lines and spillage of gasoline or other flammables—a danger which may be aggravated by lack of water due to broken water lines
- Drastic human actions resulting from panic

Before an Earthquake

The following information should be provided to the general public.

Check for earthquake hazards. Bolt down or provide other strong support for water heaters and gas appliances. Fire damage can result from toppled appliances and broken gas lines caused by earthquakes. Place large, heavy objects on lower shelves of closets and storage areas. Brace or anchor high or top-heavy objects. Wire or anchor overhead lighting fixtures.

During an Earthquake

- Remain calm. Think through the consequences of any actions and try to reassure others.
- If indoors, watch for falling plaster, bricks, light fixtures, or other building fixtures. Watch for high bookcases, china cabinets, shelves, or other furniture which might slide or topple. Stay away from windows, mirrors, and chimneys. If in danger, move under a table, desk, or bed located in a corner away from windows, or in a strong doorway. Do not use candles, matches, or other open flames during the tremor. Extinguish all fires.
- If outside, avoid high buildings, walls, power poles, or other objects that could fall. If possible, move to an open area away from all hazards. If in a vehicle, stop in the safest place available, preferably an open area. Stop as quickly as safety permits but stay in the vehicle for shelter.

After an Earthquake

- Check victim's for injuries. Do not attempt to move the seriously injured unless they are in immediate danger of further injury.
- Check for fires.
- Wear shoes in areas near debris or broken glass.
- Check utility lines and appliances for damage. If gas leaks are found, shut off the main gas valve. Shut off electrical power if there is damage to wiring. Do not use matches or lighters until the area has been checked for gas leaks. Do not turn light switches on and off. Sparks can ignite gas from broken lines.
- Clean up spilled potentially harmful chemicals and materials immediately.
- Draw a moderate quantity of water in case the water supply should be disrupted. If water is turned off, emergency water may be obtained from hot water heaters, toilet tanks, melted ice cubes, or bottled water. If water pipes are damaged shut off the water supply at the main valve.
- Check to see that sewage lines are intact before permitting toilets to be flushed.
- Do not eat or drink anything from open containers that have been near shattered glass.
- Check chimneys for cracks and damage. Unnoticed damage can lead to a fire. Approach each chimney with caution. An initial visual inspection should be made from a distance.
- Check closets and storage areas for disruption. Open closet and cupboard doors carefully to guard against falling objects.
- Check individual residences and apartment buildings for structural damage and if necessary evacuate occupants to a safe area. Stay out of severely damaged buildings, aftershocks can shake them down.
- Do not spread rumors or speculate conditions. This often causes great harm following a disaster. Stay off the telephone except to report an emergency. Stay tuned to a local radio or television station for the latest emergency bulletins.
- Do not go sightseeing, particularly in beach and waterfront areas or in areas where buildings have collapsed and electric wires may be down. Keep the streets clear for emergency vehicles. Be prepared for additional tremors.
- Respond to requests for assistance from law enforcement, fire fighters, and public assistance organizations. Do not go into a damaged area unless assistance has been requested. Cooperate with local authorities.

FLOODS

The National Oceanic and Atmospheric Administration (NOAA) via the Weather Service's River Forecast Centers and River District offices issue flood forecasts and warnings when rainfall is sufficient to cause rivers to overflow their banks or when melting snow combines with rainfall and produces a similar effect.

Flood warnings and forecasts of impending floods, are announced on the radio and television stations and through local emergency agencies. The warning message predicts the expected severity of flooding (minor, moderate, or major), the affected body of water, and when and where flooding is expected to begin. Careful preparation and prompt response can reduce property loss and ensure personal safety.

Flash flood warnings are the most urgent type of warnings issued. They are transmitted to the public over the local radio and television stations or by other local warning signals.

Local Instructions

Area radio and television stations broadcast the latest flood information and warnings; however, the local officials usually provide more specific advice and instructions over local stations. This is preferably done by a local chief executive or an emergency public information representative.

Suggested Safety Instructions

The following information should be provided to the general public.

Before a flood

- Find out how many feet a residence is located above or below the possible flood level so that when predicted flood levels are given, it is possible to determine if an area is in danger. This information may be obtained from the local engineering department or a civil defense office. Identify the location of the nearest safe area.
- Stock food which requires little cooking and no refrigeration in case of a power failure.
- Keep a portable radio, emergency cooking equipment, lights, and flashlights in working order.

- Keep first aid and medical supplies (prescriptions, insulin, etc.) on hand.
- Keep fuel in vehicles, if electric power is shut off, fuel stations may not be able to operate pumps.
- Keep emergency materials on hand (sandbags, plywood, plastic sheeting, and lumber) for emergency waterproofing.

When a flood warning is issued
- Move essential items and furniture to the upper floors if time permits.
- Move to a safe location before access is cut off by flood water if forced to leave an area.
- Shut off all electric circuits at the fuse panel or a disconnect switch. If this is not possible disconnect all electrical appliances. Store drinking water in closed, clean containers since water service may be interrupted. Shut off the water service and gas valves. Before shutting off gas valves check the local gas company policy.

During a flood
- Avoid areas subject to sudden flooding.
- Do not attempt to cross a flowing stream where water is more than knee high.
- Do not attempt to drive over a flooded road.
- If a vehicle stalls, abandon it immediately and seek higher ground.

After a flood
- Do not use fresh food that has come in contact with flood water.
- Test drinking water for potability; wells must be pumped out and the water tested before drinking.
- Do not visit the disaster area, extra vehicles can hamper rescue operations.
- Do not handle live electrical equipment in a wet area; electrical equipment should be dried and checked before returning to service.
- Use flashlights, not lanterns or torches, to examine buildings.
- Report broken utility lines to law enforcement personnel, fire fighters, or the appropriate authority.
- Stay tuned to the radio or television station for advice and instructions from local officials. i.e., Where to go to obtain necessary medical care; where to go for emergency assistance such as housing, clothing, food, etc.; and ways to help the community recover from the emergency.

CONCLUSION

The chapter dealing with natural disasters presents some interesting information. Not all areas of the country are faced with the same natural disasters; however, that is not to say that an area is never going to experience an earthquake or tornado. Many of the suggestions presented in this chapter can be applied to other mass disaster situations. A key factor in any large-scale disaster is to have a master plan to organize rescue efforts, to have an agency in charge, and to have an incident commander. Most disasters result in a total community being affected and involved in the after effects.

Much of the information presented must be shared by rescuers and other emergency personnel to the citizens.